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Southern Division
Naval Facilities Engineering Command
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Dear David:

SUBJECT:

Solid Waste Management Unit Assessment Report

for Tetrachloroethene Release near Building 191

U.S. Naval Station, Mayport, Florida CLEAN District I CTO No. 0028 Contract No. N62467-89-D-0317/028

#### INTRODUCTION

The following report presents the site description, background, field investigative activities, findings, preliminary risk evaluation, and conclusions and recommendations for the assessment of the possible release of a solvent, tetrachloroethene, to the environment at Building 191, U.S. Naval Station (NAVSTA), Mayport, Florida. Confirmation of the release at concentrations that exceed human health or ecological risk-based screening criteria are criteria used to recommend the site be designated as a solid waste management unit (SWMU) or area of concern (AOC) under the NAVSTA, Mayport Resource Conservation and Recovery Act (RCRA) Corrective Action program. Figures and tables described in this report are provided in Attachments A and B, respectively. A chronology of events and correspondence related to the possible release of the solvent at Building 191 are presented in Attachment C, Table C-1.

NAVSTA, Mayport is located in northeastern Duval County, Florida, at the confluence of the St. Johns River and the Atlantic Ocean (Figure 1). The location of Building 191 at NAVSTA, Mayport relative to other sites designated as SWMUs within the Group III SWMUs are shown on Figure 2. Building 191, which houses the Fleet Industrial Supply Center, is located on the south side of Massey Avenue in central NAVSTA, Mayport (Figure 3).

Building 191 is not listed in NAVSTA, Mayport's Hazardous and Solid Waste Amendment (HSWA) permit as either an SWMU or AOC. The purpose of the assessment at Building 191 was to collect surface and subsurface soil samples and groundwater samples for laboratory analysis. The analytical data are used to confirm whether or not a hazardous material(s) has been released to the environment. Release of a contaminant(s) to the environment at Building 191 is suspected but not confirmed.



ABB Environmental Services Inc.

The sampling event is not intended to assess the horizontal and vertical extent of contamination, if present. Data analysis has been focused to support one of the following recommendations for Building 191: (1) take no further action, (2) investigate the nature and extent of contamination by performing an Resource Conservation and Recovery Act (RCRA) facility investigation (RFI), or (3) implement an interim measure to remediate a potential threat to human or ecological receptors.

### SITE DESCRIPTION AND BACKGROUND

Below are paragraphs describing the Building 191 site and background information pertaining to a release of tetrachloroethene near Building 191.

<u>Site Description</u>. Storage areas at Building 191 are used to support ship and shore services at NAVSTA, Mayport by providing areas to receive, temporarily store, and distribute supplies. Outlying building are used to warehouse hazardous materials such as solvents and compressed gases. These buildings or structures include two quonset buildings (Buildings 264 and 281), an open-sided covered structure with concrete floor (Building 191-A), and an aluminum-constructed structure (Building 191-C).

Three SWMUs are located in the vicinity of Building 191 slopes gently toward the southwest. Three SWMUs are located in the vicinity of Building 191: SWMU 46, the Shore Intermediate Maintenance Activity (SIMA), and SWMUs 20 and 21, the Hobby Shop Drain and Scrap Storage Areas (Figure 2). SIMA is located to the north, across Massey Avenue from Building 191. The Hobby Shop (Building 414) is located approximately 270 feet to the east of Building 191. South of Building 191 is part of the station's golf course.

**Background**. An accident report dated May 4, 1993, indicates that approximately 25 to 30 gallons of tetrachloroethene (a solvent used for drycleaning) were released from a punctured 55-gallon drum onto asphalt pavement (Attachment C). The release was reported to have been contained before it could enter a nearby stormwater inlet located approximately 130 feet from the release (Attachment C; Accident Report, May 4, 1993). The release was located north of Building 191 between Buildings 281 and 191-A (Attachment C; Public Works Center Memorandum, May 4, 1994). The approximate areal extent of the release near Building 191-A is shown on Figure 3 and is based on the map in the Public Works Center Memorandum (May 4, 1994).

In correspondence dated August 10, 1994, from Lieutenant Commander Douglas P. Tomlinson, Staff Civil Engineer, Department of the Navy, to Mr. Erney Frey, Northeast District, Florida Department of Environmental Protection (FDEP), Lt. Tomlinson reports that analytical results from samples consisting of asphalt, limerock, and soil collected from within the release area "show that the area is clean of contamination and requires no further action" (Attachment C).

A contamination assessment report was prepared by Environmental Science and Engineering, Inc. (ESE, 1994) for the assessment of a potential release(s) of diesel fuel from leaking underground lines from an aboveground storage tank (300-gallon capacity) located on the southern side of Building 191. The assessment by ESE consisted of installing three piezometers and four monitoring wells, collecting information on water levels in the vicinity of Building 191, determining groundwater flow directions, and collecting groundwater samples for chemical analysis from the monitoring wells.

Tetrachloroethene (22 micrograms per liter  $[\mu g/\ell]$ ) and trichloroethene (5  $\mu g/\ell$ ) were detected in a groundwater sample collected by ESE from monitoring well MW-4 (ABB Environmental Service, Inc. [ABB-ES] designation MPT-TC-MW04S), located on the northern side of Building 191 (Figure 3) (ESE, 1994). Groundwater samples collected from monitoring wells MW-1, MW-2, and MW-3 (ABB-ES

designations MPT-TC-MW01S, MPT-TC-MW02S, and MPT-TC-MW03S, respectively), located south and southwest of Building 191, did not contain detectable concentrations of tetrachloroethene or trichloroethene (ESE, 1994). Groundwater flow direction, as determined by ESE, was to the southwest.

Subsequent to the ESE report, ABB-ES was requested to prepare a workplan to assess whether hazardous materials have been released to the environment. A site visit was made by ABB-ES personnel in March 1995 to select proposed sampling locations at the site. The piezometers and monitoring wells installed by ESE were still located at Building 191 and based on their appearance were assumed to be functional. A sampling and analysis workplan was developed by ABB-ES (1995b) based upon the site visit and the results of the assessment conducted by ESE.

Soil and groundwater sampling was proposed to assess whether or not hazardous constituents have been released at the site and to obtain a sufficient number of samples to evaluate potential exposure pathways and conduct a preliminary risk screening. There are no ecological receptor pathways because the sites are paved; therefore, risks to ecological receptors were not considered.

#### REPORT FORMAT

This report provides results of sampling activities at Building 191. The report includes a summary of field investigative activities, findings, a preliminary risk evaluation, and recommendations. The report contains the following elements:

- Field investigations present data collection activities and deviations from the workplan (ABB-ES, 1995b), if any, that occurred during the assessment of the possible solvent release at Building 191.
- Findings present a brief characterization of the geologic and hydrologic setting and laboratory analytical results for surface and subsurface soil and groundwater samples.
- The preliminary risk evaluation presents an assessment of chemicals detected in surface and subsurface soil and groundwater samples. The preliminary risk evaluation includes comparison of the chemical concentrations detected in environmental samples with human health screening criteria (benchmarks) for each environmental medium.
- Recommendations present a suggested action(s) based on interpretation of the data collected during the field activities, the laboratory analytical results, and the preliminary risk evaluation.

A general overview of the environmental setting of NAVSTA, Mayport and methods used conducting the assessment at Building 191 is available in the RCRA Corrective Action Program General Information Report (GIR) for NAVSTA, Mayport (ABB-ES, 1995a). This report provides information generated during the RCRA Corrective Action program at NAVSTA, Mayport and includes background sampling information, analytical methodology, risk assessment approach, and the ecological characterization of NAVSTA, Mayport. The NAVSTA, Mayport GIR also contains a summary of published information including geography, physiography, demographics, climate, regional geology, and hydrogeology; methods and procedures used to conduct the field activities; methodology used to validate analytical data and conduct risk assessments; and characterization of stationwide background conditions including surface and subsurface soil, surface water, sediment, and groundwater that is used to evaluate the data from each SWMU investigation. Because the information contained in the GIR (ABB-ES, 1995a) is common to all

of NAVSTA, Mayport's SWMU groups, which includes areas adjacent to Building 191, it will not be repeated in this report.

#### **FIELD INVESTIGATION**

Except as noted within this report, field activities were conducted in general accordance with the approved NAVSTA, Mayport RFI Workplan (ABB-ES, 1991). The general operating guidelines for access, security, and field team organization implemented during investigation activities were consistent with RFI requirements as described in Chapter 2.0, Site Management Plan, of the RFI Workplan, Volume II (ABB-ES, 1991). In addition, Section 3.1, General Site Operations, of the RFI Workplan, Volume II, provides descriptions of field personnel responsibilities, sample identification, sample management, chain of custody, project documentation, field changes, corrective actions, decontamination, waste management, and other general project standards and procedures. These general requirements were followed during sampling activities at Building 191.

Field activities to assess the possible release of a solvent at Building 191 included the following: (1) field screening using a TerraProbe<sup>SM</sup> to collect groundwater samples for onsite field screening using a portable gas chromatograph (GC); (2) collecting surface and subsurface soil samples; (3) installing monitoring wells; (4) collecting groundwater samples; and (5) submitting these environmental samples for laboratory analysis (ABB-ES, 1995b).

Below is a description of the field activities conducted in the vicinity of Building 191. The location of Building 191-A and the reported release relative to the sampling locations are shown on Figures 3 and 4.

<u>Soil Sampling</u>. Surface and subsurface soil sampling was accomplished as described in the NAVSTA, Mayport RFI Workplan (ABB-ES, 1991), and Subsection 2.1.1, Soil Sampling, of the GIR (ABB-ES, 1995a). Surface and subsurface soil samples were collected on May 31, 1995, from areas adjacent to Building 191 (Figure 4). Surface and subsurface soil samples were collected to assess whether or not hazardous constituents have been released to these media.

The soil samples consist of four surface and subsurface soil sample pairs and one duplicate for each medium. Surface soil samples were collected from the land surface to a depth of 1 foot, and subsurface soil samples were collected from 2 to 3 feet below land surface (bls).

Groundwater Field Screening. Field screening of groundwater using a TerraProbe<sup>SM</sup> was accomplished as described in Paragraph 2.1.4.1, Terraprobe<sup>SM</sup> Groundwater Sampling, of the NAVSTA, Mayport GIR (ABB-ES, 1995a). Groundwater field screening was proposed (ABB-ES, 1995b) to assess the area where the tetrachloroethene was reported to have been released (please refer to Attachment C) and in the vicinity of monitoring wells where groundwater samples were collected and contained tetrachloroethene and trichloroethene (ESE, 1994). The purpose of the groundwater field screening program was to select locations for installing monitoring wells that would be used in collecting groundwater samples that would be used to confirm the presence of hazardous constituents, if any.

Fifteen groundwater field screening samples (excluding duplicates) were collected in the vicinity of Building 191 using the TerraProbe<sup>SM</sup> direct-push technology (Figure 4). Groundwater samples were collected from 4 to 6 feet bls. Each of the groundwater samples was then transported directly to an onsite field screening laboratory for analysis.

Monitoring Well Installation. Drilling and well installation was accomplished as described in the NAVSTA, Mayport RFI Workplan (ABB-ES, 1991) and Subsection 2.1.1, Monitoring Well and Piezometer Installation, of the NAVSTA, Mayport GIR (ABB-ES, 1995a). The purpose of the monitoring wells was to allow the collection of groundwater samples that are representative of the water table zone of the surficial aquifer.

Previously, four shallow wells (MW-1 through MW-4, designated MPT-TC-MW01S, MPT-TC-MW02S, MPT-TC-MW03S, and MPT-TC-MW04S, respectively, by ABB-ES) and one deep monitoring well (MW-1D, designated MPT-TC-MW01I by ABB-ES) were installed by ESE to assess a suspected release of diesel fuel at Building 191 (ESE, 1994) (Figures 3 and 4).

Two monitoring wells (MPT-TC-MW05S and MPT-TC-MW06S) were installed on May 31, 1995, by ABB-ES at Building 191 (Figure 4). The new monitoring wells were developed on June 2, 1995. Boring logs for the two newly installed monitoring wells at Building 191 and at nearby SWMUs 20 and 21 (Figure 4) are in Attachment D. The boring logs for monitoring wells at SWMUs 20 and 21 are included with this report because water level data from these wells were used in determining the direction of groundwater flow in the vicinity of Building 191.

Groundwater Sampling. Groundwater sampling was accomplished as described in Subsection 2.1.4, Groundwater Sampling, of the NAVSTA, Mayport GIR (ABB-ES, 1995a). Six groundwater samples were collected on June 26 and 27, 1995, from the existing and newly installed monitoring wells. The shallow water table zone monitoring wells are screened at depths which range from approximately 2 to 15 feet bls in the surficial aquifer. The purpose of the groundwater samples was to confirm whether or not there has been a release of hazardous constituents to groundwater in the vicinity of Building 191.

Monitoring well MPT-TC-MW01I (installed by ESE), which is screened from approximately 35 to 40 feet bls, was not sampled because of an obstruction in the well casing.

Groundwater sampling was accomplished using low-flow sampling (less than 1 liter a minute). This groundwater sampling procedure is a modification of previous sampling methods; however, it closely resembles a method proposed by U.S. Environmental Protection Agency (USEPA) (1994). Prior to groundwater sample collection, the monitoring well was slowly purged with the intake hose (disposable Teflon<sup>TM</sup>) of a peristaltic pump at the middle of the well screen interval. Purging was conducted to remove stagnant water within the well screen interval without causing the resuspension of silts and clays. Turbidity, temperature, pH, and specific conductance were measured during purging to ensure good hydraulic continuity between the well and the surrounding aquifer matrix. Each monitoring well was purged until temperature, specific conductance, and pH had stabilized and at least three well volumes of water were removed. Also, purging continued until a turbidity of 5 nephelometric turbidity units (NTUs) or less was achieved.

The groundwater samples were collected using a peristaltic pump and disposable Teflon<sup>TM</sup> tubing. Aliquots for semivolatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBS), and inorganics were collected first, and the aliquot for volatile organics was collected last. The aliquots for SVOCs, pesticides, PCBS, and inorganics were collected before the material came in contact with the peristaltic pump. The inorganic groundwater samples were not filtered and represent total concentrations. The aliquot for volatile organic compound (VOCs) was collected when the Teflon<sup>TM</sup> tubing (which contained the groundwater sample) was removed from the monitoring well. The tubing contents were carefully transferred to a VOC vial for shipment to the laboratory.

<u>Analytical Program and Data Validation</u>. Environmental samples were analyzed using field screening and offsite laboratory analytical methods. Samples submitted for offsite laboratory analysis were validated, and screening data were not validated. Below is a description of the analytical programs and data validation.

Field Screening. Groundwater samples collected using direct-push technology were screened for halogenated organics and aromatic organics using HNu, Inc. systems portable GC with a photoionization detector.

Laboratory Analysis. Soil and groundwater samples were analyzed for target analytes selected from the Groundwater Monitoring List contained in Appendix IX, 40 Code of Federal Regulations (CFR), Part 264, and USEPA Contract Laboratory program target compound list and target analyte list, including VOCs, SVOCs, pesticides, PCBs, and inorganics (metals and cyanide). The analysis was conducted using methods contained in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, USEPA SW846 (USEPA, 1986). The analytical methods for each fraction and a list of the target analytes are presented in Tables 2-2 through 2-5 of the NAVSTA, Mayport GIR (ABB-ES, 1995a). Analytical results of the 1995 sampling events at Building 191 are provided in Attachment E.

Data Validation. Data validation is the technical review of individual analytical results relative to the following criteria:

- Data quality objectives (DQOs) and the quality assurance project plan (QAPP) in the NAVSTA, Mayport RFI Workplan (ABB-ES, 1991)
- Naval Energy and Environmental Support Activity (NEESA) guidance document 20.2-047B, Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Program (NEESA, 1988)
- Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses (USEPA, 1988)
- National Functional Guidelines for Organic Data Review (USEPA, 1990)

The data validation process is described in Section 2.3 of the NAVSTA, Mayport GIR (ABB-ES, 1995a).

After the data were reviewed and validated, they were evaluated using the precision, accuracy, representativeness, comparability, and completeness (PARCC) criteria specified in the DQOs. PARCC criteria are described in Section 2.3 of the NAVSTA, Mayport GIR (ABB-ES, 1995a). The evaluation of the Building 191 data according to the PARCC criteria is presented within the Group III RFI Report for NAVSTA, Mayport (ABB-ES, 1996).

### **FINDINGS**

Below are paragraphs describing results of the sampling activities at Building 191. The findings include site geologic and hydrogeologic conditions, results of the field screening investigation, and analyses of surface and subsurface soil and groundwater samples.

<u>Site Geology</u>. Subsurface soils encountered during the installation of monitoring wells at Building 191 and nearby SWMUs had little variation over the short lateral distance between each location. The boring logs (MPT-TC-MW01S through MPT-TC-MW04S) prepared by ESE (1994) indicate that to explored

depths of 13 and 14 feet bls subsurface soil consists predominantly of a fine-grained, silty sand. Beneath the pavement at boring locations MPT-TC-MW05S and MPT-TC-MW06S the subsurface soil was found to consist of dark brown fine to very fine-grained silty sands to approximately 3 feet bls, underlain by light tan to grey fine sand, with varying amounts of shell fragments.

These materials may consist of dredge and/or naturally deposited material. The thickness of the dredge material is not known because of the similarity between the dredge and natural materials.

At boring location MPT-TC-MW01I, the subsurface soil consists of fine-grained silty sands to 15 feet bls and were underlain by fine to very fine sands with varying amounts of shell fragments to the explored depth of 40 feet bls (ESE, 1994).

<u>Site Hydrogeology</u>. Groundwater levels were measured on July 19, 1995, in monitoring wells located in the vicinity of Building 191. The depth to groundwater at each monitoring well location was measured relative to the top of the monitoring well casing. The depths to groundwater measured in the monitoring wells and in other wells (SWMUs 20 and 21) in the vicinity of the site are provided in Table 1. Also shown in the table are values for the water level measurements relative to the National Geodetic Vertical Datum (NGVD) of 1929 (commonly referred to as mean sea level [msl]).

The elevation data were used to prepare a map of potentiometric surface lines that represent altitudes of equal height above the reference datum for the water table zone of the surficial aquifer (Figure 5). The potentiometric surface map of the water table is used to infer that groundwater flow is from higher to lower altitudes in a direction perpendicular to the equipotential lines. Based on the equipotential lines shown on Figure 5, the groundwater flow direction at Building 191 on July 19, 1995, appears to be toward the west. This direction of groundwater flow differs from the southwestern direction determined by ESE (1994). The difference is likely the use of monitoring wells located at SWMUs 20 and 21 to aid in determining the groundwater flow direction; these wells were not present at the time ESE conducted their study. The hydrologic relationship of monitoring wells relative to Building 191-A, which is located adjacent to the reported release of tetrachloroethene, is provided in Table 2.

An approximation of the horizontal linear velocity of groundwater flow in the water table zone of the surficial aquifer in the vicinity of Building 191 is based on the potentiometric surface (hydraulic gradient) of the water table, estimates of radial hydraulic conductivities at monitoring well locations, and an estimate of the porosity (ratio of the volume of voids to total volume of the soil) of the saturated subsurface soil. The horizontal linear velocity was calculated from a modified form of Darcy's equation and represents the ratio of linear travel distance to travel time between two points (Freeze and Cherry, 1979). The horizontal linear velocity is expressed as  $V_D/N_e$ , where  $V_D$  is the Darcy velocity ( $V_D = KI$ , K = radial hydraulic conductivity, and I = hydraulic gradient) and  $N_e$  is the effective porosity of the saturated geologic stratum. An effective porosity of 0.35 was used in the calculations. (See Subsection 3.2.3, Physical Characteristics of Soil, in the NAVSTA, Mayport GIR [ABB-ES, 1995a] or Subsection 3.2.5, Physical Characteristics of Soil, in the Group III RFI Report [ABB-ES, 1996]).

In situ radial hydraulic conductivity values for monitoring wells in the vicinity of Building 191 (including monitoring wells at SWMUs 20 and 21) are presented in Table 3. In situ radial hydraulic conductivity values for monitoring wells located near Building 191 range from approximately 1.4 feet per day (MPT-TC-MW06S) to 20.5 feet per day (MPT-TC-MW03S) with an average hydraulic conductivity value of 11.3 feet per day (excluding the monitoring wells at SWMUs 20 and 21).

A hydraulic gradient of 0.011 foot per foot (ft/ft) for the vicinity of Building 191 and 0.0064 ft/ft for the vicinity of SWMUs 20 and 21 was estimated between monitoring wells MPT-20-MW03S and MPT-TC-

MW04S and MPT-20-MW02S and MPT-20-MW03s, respectively, using water level data obtained on July 19, 1995.

Based on the values for horizontal linear velocity and assuming no dilution, dispersion, or retardation, a contaminant in the water table zone of the surficial aquifer may travel at rates of 16 to 235 feet per year and average approximately 130 feet per year (Table 3) in the vicinity of Building 191.

Relatively lower horizontal linear velocities, ranging from 15 to 52 feet per year, are indicated for the adjacent SWMUs 20 and 21 as compared to the range of values determined at monitoring wells at Building 191. The difference is likely a result of less permeable materials that have lower hydraulic conductivity values and a lower hydraulic gradient (Table 3).

Surface and Subsurface Soil Samples. Four surface and subsurface soil sample pairs were collected in the vicinity of Buildings 191 and 191-A (Figure 3). One surface and subsurface soil sample pair (MPT-TC-SS/BS01) was collected from a grassy area located adjacent to the north side of Building 191. The other three surface and subsurface soil sample pairs (MPT-TC-SS/BS02 through MPT-TC/SS/BS04) were collected from grassy areas on the north and east side of Building 191-A. Surface soils found at these sampling locations consist of dark brown, fine to very fine silty sand. Subsurface soil was similar to the surface soil but contained pea-size shell fragments. Below are summaries of the chemicals detected in the surface and subsurface soil samples.

Surface Soil. Tables 4 and 5 summarize the validated analytical results for organic and inorganic target analytes, respectively, detected in the surface soil samples. Organic target analytes detected in the surface soil samples consist of 1 VOC (methylene chloride), 11 SVOCs (dimethylphthalate, phenanthrene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene), 4 pesticides (heptachlor, heptachlor epoxide, 4,4'-dichlorodiphenyldichloroethene [DDE], and chlordane) and 1 PCB (Aroclor-1260) (Table 4). It should be noted that most of the SVOCs were detected from surface soil sampling locations MPT-TC-SS01 and MPT-TC-SS04 that were near asphalt paved areas.

Fifteen inorganic target analytes were detected in the surface soil samples. The analytes detected were arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, selenium, tin, vanadium, zinc, and cyanide (Table 5).

Subsurface Soil. Tables 6 and 7 summarize the validated analytical results for organic and inorganic target analytes, respectively, detected in the subsurface soil samples. Organic analytes detected in the subsurface soil samples consist of three VOCs (methylene chloride, carbon disulfide, and trichloro-fluoromethane), and one pesticide (chlordane) (Table 6).

Nine inorganic target analytes were detected in the subsurface soil samples. The analytes detected were barium, beryllium, chromium, copper, lead, tin, vanadium, zinc, and cyanide (Tables 7).

Groundwater Field Screening. Field screening results for the groundwater samples (Figure 5) suggest that tetrachloroethene, toluene, and trichloroethene were possibly present (Table 8). Concentrations of tetrachloroethene, toluene, and trichloroethene ranged from 34.9 to 445  $\mu g/\ell$ , 1.0 to 2.5  $\mu g/\ell$ , and 2.3 to 7.9  $\mu g/\ell$ , respectively. The highest detected concentrations are located in the general area of the May 4, 1993, release. Based on the field screening data, monitoring well MPT-TC-MW06S was located at the release area, and well MPT-TC-MW05S was located hydraulically downgradient from the release area.

Groundwater Samples. Below is a characterization of water quality for the water table zone of the surficial aquifer in the vicinity of Building 191 and results of the chemical analysis of groundwater samples from the existing and newly installed monitoring wells (Figures 3 and 4).

Water Quality. Measurements of indicator parameters for groundwater are provided in Table 9. Results of indicator parameters for the shallow groundwater beneath Building 191 groundwater monitoring wells were compared to the State of Florida secondary water quality criteria (Florida Administrative Code [FAC], Chapter 62-550.320) (Table 10).

Total dissolved solids (TDS) ranged from 280 to 631; the secondary water quality standard for TDS is 500 milligrams per liter  $(mg/\ell)$  (FAC, 62-520). TDS exceed State of Florida secondary water quality criteria of 500 mg/ $\ell$  in one of six groundwater samples. A maximum value of 10,000 mg/ $\ell$  is the criterion used to classify groundwater in an aquifer as a Class G-I or G-II drinking water supply. The values measured are less than the maximum criterion used to classify the groundwater as a G-I or G-II drinking water supply. TDS also is used to classify water as fresh (0 to 1,000 mg/ $\ell$ ), brackish (1,000 to 10,000 mg/ $\ell$ ), and saline (10,000 to 100,000 mg/ $\ell$ ) (Freeze and Cherry, 1979). The TDS results suggest that the groundwater would be considered fresh.

Concentrations of chloride detected in the groundwater samples ranged from 10.9 to 30 mg/ $\ell$ ; the secondary water quality standard for chloride is 250 mg/ $\ell$  (FAC, 62-520, Groundwater Classes, Standards and Exemptions). Chloride measured in groundwater samples was less than this standard.

Color measured in the groundwater samples ranged from 15 to 100 American Public Health Association (APHA) units. The standard for color is 15 APHA units, which was exceeded in groundwater samples.

Sulfate, a common form of sulfur found in oxygenated systems, ranged from 33.1 to 98.1 mg/ $\ell$ ; the water quality standard for sulfate is 250 mg/ $\ell$  (FAC, 62-520). The concentrations measured were less than the standard.

Hardness was measured at 224 to 505 mg/ $\ell$ , which suggests that the water is very hard (greater than 180 mg/ $\ell$  [Durfor and Becker, 1964]).

A summary of nutrients (ammonia-N [ammonia as nitrogen], nitrate/nitrite, phosphorous-P, and total Kjeldahl nitrogen) measured in the groundwater samples is provided in Tables 9 and 10.

Results of the water quality indicator parameters suggest that groundwater in the vicinity of Building 191 meets the criteria of a Class G-I or G-II drinking water supply.

Analytical Results. Tables 11 and 12 summarize the validated analytical results for organic and inorganic target analytes, respectively, detected in groundwater samples collected at Building 191. Six VOCs, including 1,2-dichloroethene, chloroform, bromodichloromethane, dibromochloromethane, tetrachloroethene, and trichloroethene, were detected in the groundwater samples collected from the monitoring wells in the vicinity of Building 191. No SVOCs, pesticides, or PCBs were detected in the groundwater samples.

The trihalomethanes, bromodichloromethane, chloroform, and dibromochloromethane were detected in the groundwater sample collected from monitoring well MPT-TC-MW02S. This monitoring well is located hydraulically sidegradient from the location of the tetrachloroethane release (Table 2, and Figures 3 and 5).

1,2-Dichloroethene, tetrachloroethene, and trichloroethene were detected in groundwater samples from monitoring wells MPT-TC-MW04S and MPT-TC-MW05S, which are located hydraulically downgradient from the release site. Trichloroethene and 1,2-dichloroethene can be byproducts from sequential reductive dehalogenation of tetrachloroethene (USEPA, 1987). Monitoring well MPT-TC-MW04S also may be considered to be slightly hydraulically sidegradient to the release site.

It should be noted that VOCs were not detected in the groundwater sample from monitoring well MPT-TC-MW06S, which was located near the tetrachloroethene release site (Figures 3 and 4).

There was not a good correlation between the groundwater field screening samples and the groundwater samples collected from monitoring wells. This may be a result of the length of the intake for the TerraProbe<sup>SM</sup> sampler (2 feet) and the length of the monitoring well screen (10 feet). The groundwater sample collected with the TerraProbe<sup>SM</sup> sampler may represent a strata or aquifer zone where contaminants are present at higher concentrations, whereas the monitoring well with a longer intake interval may provide a sample that represents a composite over a larger area (Pohlmann and Alduino, 1992).

Twelve inorganic analytes were detected in the groundwater samples. Inorganic analytes detected include: arsenic, barium, beryllium, calcium, iron, magnesium, manganese, selenium, silver, sodium, vanadium, and cyanide. The highest detected concentrations of arsenic, calcium, iron, manganese, and silver appear to be in the groundwater sample collected from monitoring well MPT-TC-MW01S. This monitoring well is located hydraulically sidegradient from the location of the tetrachloroethane release (Table 2, and Figures 3 and 5). The detection of these chemicals in a monitoring well located hydraulically sidegradient from the tetrachloroethene release site suggests that they are not related to the incident. It is likely that inorganic chemicals detected in groundwater samples may be related to the deposition and natural leaching of inorganics from dredge material used to construct the land mass at NAVSTA, Mayport (ABB-ES, 1996).

### PRELIMINARY RISK EVALUATION

The Federal National Oil and Hazardous Substance Pollution Contingency Plan (NCP), Final Rule, (40 CFR, Part 300) states that for carcinogens a lifetime excess cancer risk in the range of  $1\times10^{-4}$  (a chance of 1 in 10,000 for an adverse carcinogenic effect for a continuous lifetime exposure) to  $1\times10^{-6}$  represents concentrations that are considered by USEPA to be protective of human health. FDEP, however, uses  $1\times10^{-6}$  as a risk management goal to evaluate whether or not contaminants at a site are present at concentrations that are protective of human health.

<u>Surface and Subsurface Soil</u>. A summary of frequencies of detection, range of detection limits, range of detected concentrations, and arithmetic mean and benchmark comparison values is provided in Tables 13 and 14 for surface and subsurface soil samples, respectively. The target analytes detected in the environmental samples were also compared in Tables 13 and 14 to background screening values computed from stationwide surface and subsurface soil samples (ABB-ES, 1995a), benchmark values from USEPA Region III risk-based concentrations (RBC) (USEPA, 1995), and the State of Florida soil cleanup goals (residential and industrial) (FDEP, 1995).

Each of the benchmark criteria provided in Tables 13 and 14 are human health-based and represent the lower of either: (1) a noncarcinogenic hazard index (HI) where values of less than 1 represent a concentration at which noncarcinogenic effects are not likely or (2) a lifetime excess cancer risk of  $10^{-6}$ , which represents a chance of 1 in 1,000,000 for an adverse carcinogenic effect for a continuous lifetime exposure.

Surface Soil. No VOCs or pesticides were detected in the surface soil samples at concentrations that exceed the benchmark values (Table 13). One SVOC (benzo(a)pyrene), one PCB (Aroclor-1260), and one inorganic (arsenic) were detected in surface soil samples at concentrations that exceeded the residential benchmark values, which are based on values for a lifetime excess cancer risk of 1x10<sup>6</sup>.

One surface soil sample (MPT-TC-SS01) contained benzo(a)pyrene (180 micrograms per kilograms [ $\mu$ g/kg]) at a concentration that exceeds residential exposure values for the USEPA Region III RBC (88  $\mu$ g/kg) and the FDEP soil cleanup goal (100  $\mu$ g/kg) (Tables 4 and 13). Benzo(a)pyrene was not detected in the surface soil samples at concentrations that exceed the FDEP industrial soil cleanup goal (500  $\mu$ g/kg).

Two surface soil samples (MPT-TC-SS01 and MPT-TC-SS04) and one duplicate (MPT-TC-SS04) contained Aroclor-1260 at concentrations (160, 170, and 150  $\mu$ g/kg, respectively) that exceed the USEPA Region III residential RBC (83  $\mu$ g/kg) (Tables 4 and 13). Aroclor-1260 was not detected in the surface soil samples at concentrations that exceed the FDEP residential soil cleanup goal (900  $\mu$ g/kg).

One surface soil sample (MPT-TC-SS01) contained arsenic (1.6 milligrams per kilogram [mg/kg]) at a concentration that exceeds the USEPA Region III residential RBC (0.37 mg/kg) and the FDEP residential soil cleanup goal (0.7 mg/kg) (Tables 5 and 13). Arsenic was not detected in the surface soil samples at concentrations that exceed the FDEP industrial soil cleanup goal (3.1 mg/kg). Arsenic was not detected in background surface soil samples.

Calculations for estimated cancer risk values are provided in Table 15 for the chemicals benzo(a)pyrene, Aroclor-1260, and arsenic that were detected in surface soil samples at concentrations exceeding the human health based screening values. A ratio at  $1 \times 10^{-6}$  was calculated using the maximum detected concentration of a chemical exceeding the human health-based screening values and the aggregate residential exposure (child and adult) for USEPA Region III RBCs and residential and industrial soil cleanup goals for the FDEP Soil Cleanup Goals (FDEP, 1995). The ratios for each chemical were summed to determine a value for an estimated cancer risk.

This assessment suggests that hypothetical residential exposure to these three chemicals in surface soil are likely to be within the risk management range of  $1x10^4$  to  $1x10^6$  that is acceptable to the USEPA. The assessment also suggests that the hypothetical residential exposure is greater than the FDEP risk management goal of  $1x10^6$ ; however, the industrial exposure is at the risk management goal.

Subsurface Soil. None of the VOCs, pesticides, or inorganic chemicals detected in the subsurface soil samples exceed either their respective residential or industrial benchmark values (Table 14). SVOCs and PCBs were not detected in the subsurface soil samples.

Groundwater. A summary of frequencies of detection, range of detection limits, range of detected concentrations, arithmetic mean, and benchmark comparison values are provided in Table 16. The target analytes detected in the environmental samples were compared in Table 16 to background screening values computed from stationwide background groundwater samples (ABB-ES, 1995a), benchmark values consisting of USEPA Region III RBCs (USEPA, 1995), and Florida groundwater guidance concentrations (FDEP, 1994). The Florida groundwater guidance concentrations consist of promulgated and unpromulgated values. The State of Florida promulgated values are equal to or more stringent than Federal primary and secondary drinking water regulations (57FR31777, July 17, 1992).

Each of the benchmark criteria provided in Table 16 are human health-based and represent the lower of either a noncarcinogenic HI where for noncarcinogens values less than 1 represent a concentration at

which noncarcinogenic effects are not likely, or for a carcinogen a lifetime excess cancer risk of 1x10<sup>-6</sup>, which represents a chance of 1 in 1,000,000 for an adverse carcinogenic effect for a continuous lifetime exposure.

Four VOCs (bromodichloromethane, chloroform, tetrachloroethene, and trichloroethene) were detected in groundwater samples at concentrations exceeding the USEPA Region III tap water RBCs and Florida groundwater guidance concentrations (Table 16).

Two trihalomethanes, bromodichloromethane and chloroform, were detected as single occurrences in monitoring well MPT-TC-MW02S at concentrations that exceed their respective USEPA Region III RBC and Florida groundwater guidance concentration. The Florida groundwater guidance concentration is based on the chemicals being carcinogens. The State's primary standard under FAC, 62-550.310, for trihalomethanes (total concentration per sample) of  $100 \mu g/\ell$  was not exceeded.

Tetrachloroethene and trichloroethene were detected in two groundwater samples (MPT-TC-MW04S and MPT-TC-MW05S) and an associated duplicate (MPT-TC-MW05S) at concentrations that exceed their respective USEPA Region III RBC and Florida groundwater guidance concentration. The Florida groundwater guidance concentrations for these two chemicals are primary standards under FAC, 62-550.310.

Four inorganic analytes (arsenic, manganese, iron, and beryllium) were detected at concentrations that exceed one or more of the benchmark values (Table 16). Arsenic and manganese were detected at concentrations exceeding the USEPA Region III tap water RBCs and Florida groundwater guidance concentrations (primary standard under FAC, 62-550.310). Iron was detected at a concentration that exceeded the Florida groundwater guidance concentration (secondary standard under FAC, 62-550.320) but not its essential nutrient screening value (ABB-ES, 1995a). Beryllium was detected at a concentration exceeding the USEPA Region III tap water RBC but not the Florida groundwater guidance concentrations.

Arsenic was detected in groundwater samples at concentrations ranging from 0.9 to 62.4  $\mu g/\ell$ , which exceeds the USEPA Region III RBC. One groundwater sample (monitoring well MPT-TC-MW01S) contained arsenic at a concentration that exceeded the Florida groundwater guidance concentration of 50  $\mu g/\ell$ . The concentration of arsenic in this sample also exceeds the background screening value.

Manganese was detected in three of six groundwater samples (monitoring wells MPT-TC-MW01S, MPT-TC-MW04S, and MPT-TC-MW06S) at concentrations that exceed the USEPA Region III RBC and Florida groundwater guidance concentration. One groundwater sample (MPT-TC-MW01S) contained manganese at concentrations that exceeded the background screening concentration.

Iron was detected in one of six groundwater samples at a concentration (4,950  $\mu g/\ell$ ) that exceeded the Florida groundwater guidance concentration (300  $\mu g/\ell$ ) and the background screening concentration (1,728  $\mu g/\ell$ ), which is also less than the essential nutrient screening value (ABB-ES, 1995a).

Beryllium was detected in one groundwater sample (MPT-TC-MW04S) at a concentration (0.36  $\mu g/\ell$ ) that exceeded the Region III tap water RBC (0.016  $\mu g/\ell$ ). This sample did not exceed the Florida groundwater guidance concentration (4  $\mu g/\ell$ ). Beryllium was not detected in the background groundwater samples.

The excess lifetime carcinogenic human health risk (groundwater) was estimated for analytes that exceeded benchmarks (bromodichloromethane, chloroform, tetrachloroethene, trichloroethene, arsenic, and beryllium) by comparison of the maximum detected value (Table 16) with the estimated  $1 \times 10^6$ 

cancer risk values from the USEPA Region III tap water RBC and the FDEP Florida groundwater guidance concentration (Table 17).

This assessment suggests that a hypothetical exposure to groundwater used as drinking water is likely to be above both USEPA's risk range and FDEP's target risk goal. The estimated HI of 9 also suggests that there is a potential noncancer risk.

#### **RECOMMENDATIONS**

The recommendations are derived from review and interpretation of the data collected during the assessment of the reported release of the solvent tetrachloroethene near Building 191-A. The recommendations are based on current use of the Building 191 area as an industrial site and a hypothetical future residential exposure. Based on the data collected, there appears to have been a release of tetrachloroethene and/or trichloroethene to the environment in the vicinity of Building 191-A, and it is recommended that this site be designated as an AOC. It is recommended that the investigation should concentrate on assessing the nature and extent of the tetrachloroethene release to groundwater and conducting a human health risk assessment. Should the results of the groundwater assessment suggest the presence of another possible source area(s), then additional soil sampling should be conducted. Below are the rationales used to derive and support the recommendations:

- No VOCs were detected in surface soil samples at concentrations that exceed benchmark values. Tetrachloroethene was not one of the VOCs detected in the surface soil samples.
- Estimated human health risks were based on exposure to benzo(a)pyrene, Aroclor-1260, and arsenic in surface soil. The estimated risk for residential exposure is within the range (1x10<sup>-4</sup> to 1x10<sup>-6</sup>) considered acceptable by USEPA but exceeds the FDEP risk target goal of 1x10<sup>-6</sup>. The estimated risk for industrial exposure is at the FDEP risk target goal.
- None of the VOCs, pesticides, or inorganic chemicals detected in the subsurface soil samples exceed either their respective residential or industrial benchmark values.
   Tetrachloroethene was not one of the VOCs detected in the subsurface soil samples, and SVOCs and PCBs detected in surface soil samples were not detected in the subsurface soil samples.
- Three trihalomethane compounds were detected in groundwater samples from monitoring wells located hydraulically sidegradient from the tetrachloroethene release site. The State's primary standard under FAC, 62-550.310, for trihalomethanes (total concentrations per sample) of  $100 \mu g/\ell$  was not exceeded.
- Chemical analytical results of groundwater samples suggest that tetrachloroethene, trichloroethene, and 1,2-dichloroethene (total) are likely present in the groundwater in the vicinity of Building 191-A. It is possible that trichloroethene and 1,2-dichloroethene are by-products from sequential reductive dehalogenation of tetrachloroethene.
- This assessment suggests that a hypothetical exposure to groundwater used as drinking water is likely to be above both USEPA's risk range and FDEP's target risk goal. The estimated HI also suggests that there is a potential noncancer risk.

- Tetrachloroethene, trichloroethene, and 1,2-dichloroethene (total) have higher densities
  relative to water and generally migrate downward in an aquifer. Where these two
  solvents are present as dense nonaqueous-phase liquids (DNAPLs), their downward
  migration may also be controlled and limited by the lithology and capillary pressure of
  the aquifer.
- The highest detected concentrations of inorganic chemicals were in a groundwater sample from a monitoring well located hydraulically sidegradient from the tetrachloroethene release site. This suggests that the concentrations of the inorganic analytes are not related to the tetrachloroethene release. It is likely that inorganic chemicals detected in groundwater samples may be related to the deposition and natural leaching of inorganics from dredge material used to construct the land mass at NAVSTA, Mayport (ABB-ES, 1996).

If you have any questions or comments concerning this information, or should any additional information become available for this site that would affect this recommendation, please contact us.

Sincerely,

ABB Environmental Services, Inc.

Francis K. Lesesne, P.G.

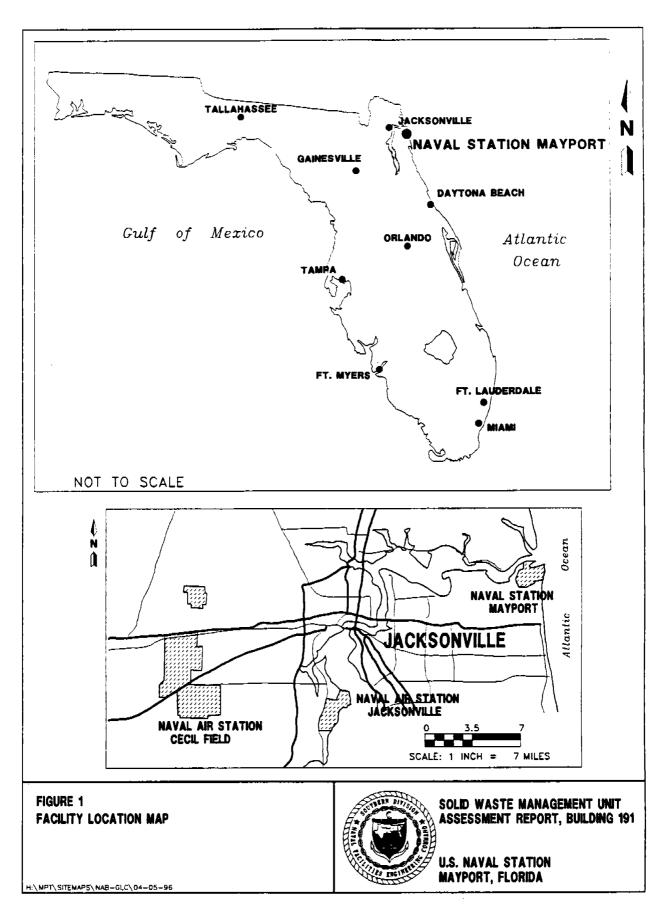
Technical Lead

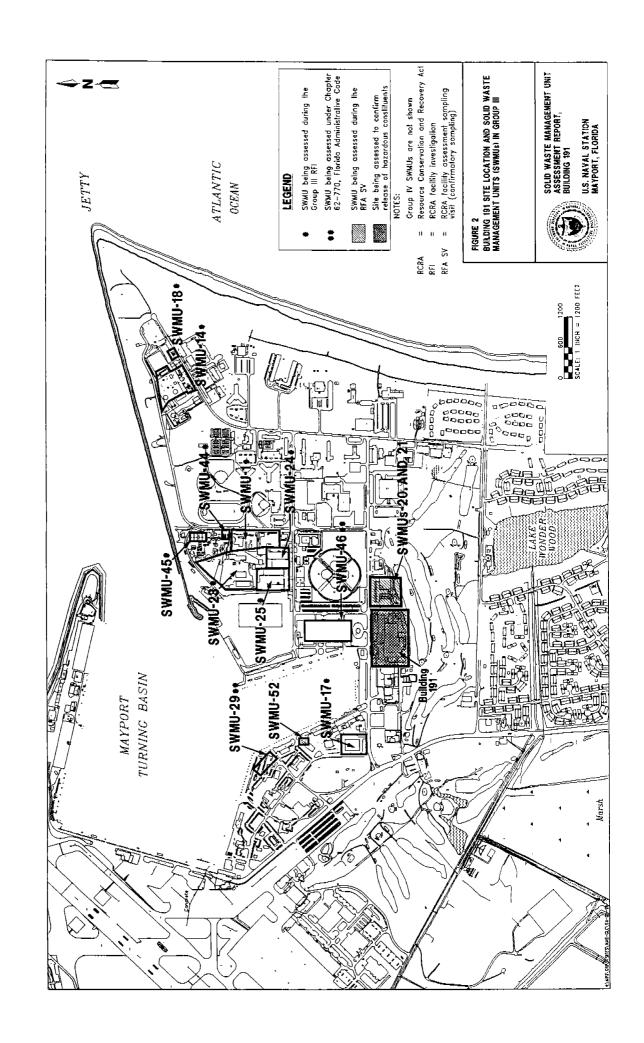
Terry Hansen, P.G.

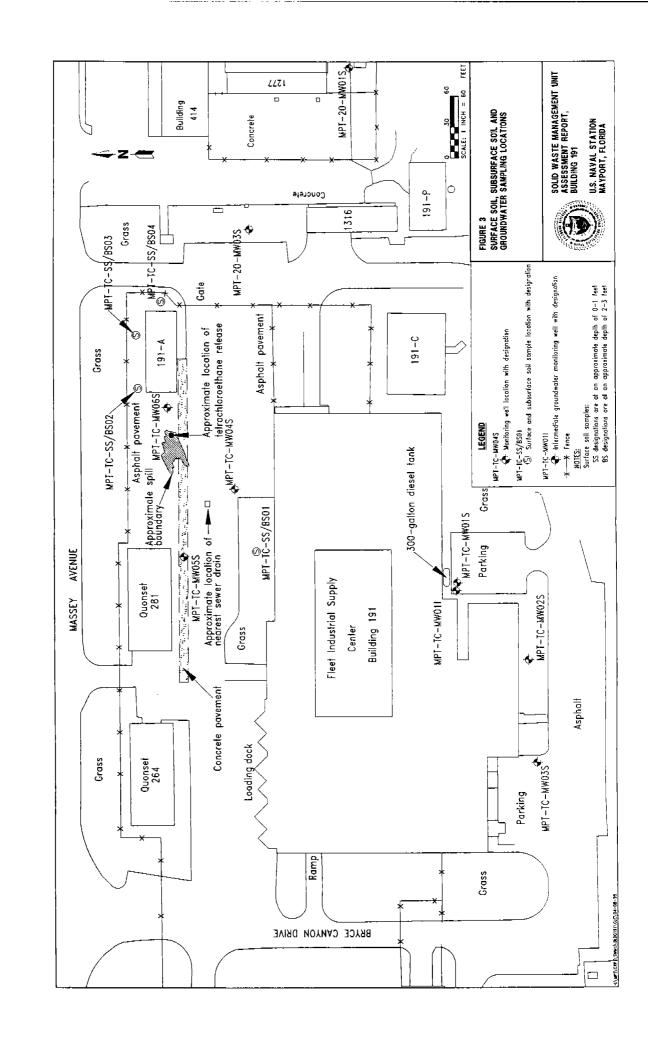
Project Manager

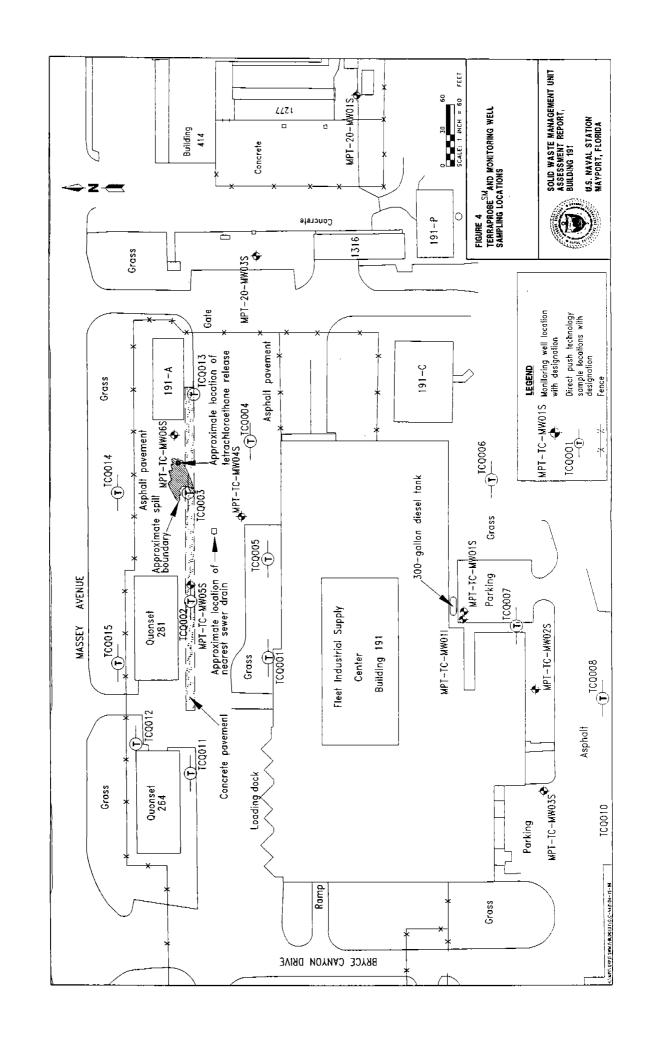
cc: Cheryl Mitchell, NAVSTA, Mayport

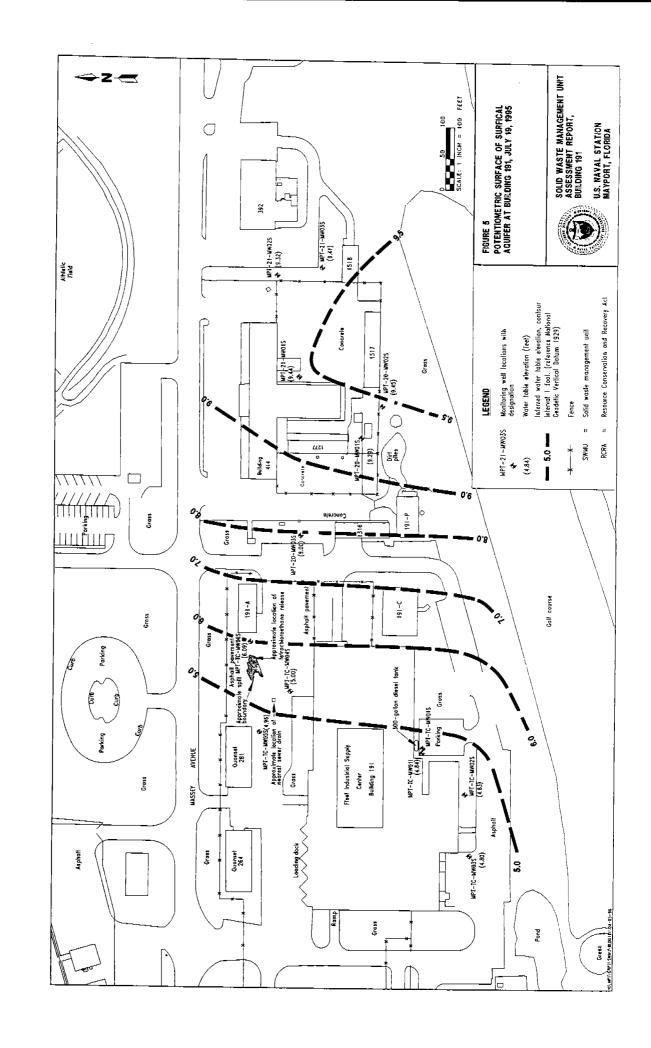
# ATTACHMENT A FIGURES











ATTACHMENT B
TABLES

### Table 1 Building 191 Water-Level Data, July 19, 1995

SWMU Assessment Report for TCE Release near Building 191 U.S. Naval Station Mayport, Florida

			Water Level	
Monitoring Well	Elevation (NGVD)	Time (EST)	Depth (TOC)	Elevation (msl)
MPT-TC-MW01S	9.56	12:16	4.72	4.84
MPT-TC-MW011	9.6	NM	NM	NM
MPT-TC-MW02S	10.89	12:14	6.06	4.83
MPT-TC-MW03S	8.68	12:06	3.88	4.8
MPT-TC-MW04S	8.78	12:40	3.78	5.0
MPT-TC-MW06S	9.84	12:36	3.75	6.09
MPT-TC-MW05S	8.73	12:38	3.77	4.96
MPT-20-MW01S	13.49	12:51	4.20	9.29
MPT-20-MW02S	13.68	11:55	4.23	9.45
MPT-20-MW03S	12.01	12:33	4.01	8.00
MPT-21-MW01S	13.21	12:46	3.77	9.44
MPT-21-MW02S	12.79	12:59	3.47	9.32
MPT-21-MW03S	12.36	13:02	2.95	9,41

Notes: SWMU = solid waste management unit.

TCE = trichloroethene.

NGVD = National Geodetic Vertical Datum of 1929.

EST = Eastern Standard Time.

TOC = top of casing; the top of casing was the surveyed datum point for measuring the water level.

msi = mean sea level.

 $S=\mbox{suffix}$  on the monitoring well identifier that designates a shallow monitoring well screened across the water table.

I = suffix on the monitoring well that designates a well screened in an intermediate zone of the sufficial aquifer.

NM = water level not measured.

# Table 2 Hydraulic Position of Monitoring Wells Relative to Building 191-A and Nearby Solid Waste Management Units

SWMU Assessment Report for TCE Release near Building 191 U.S. Naval Station Mayport, Florida

SWMU Number	Monitoring Well No.	Hydraulic Position	Diameter (inches)	Total Depth (feet)	Screened Interval (feet bis)
NA	MPT-TC-MW01S	S of Building 191-A	4	13	3 to 13
NA	MPT-TC-MW01I	S of Building 191-A	4	40	35 to 40
NA	MPT-TC-MW02S	S of Building 191-A	4	14	4 to 14
NA	MPT-TC-MW03S	S of Building 191-A	4	13	3 to 13
NA	MPT-TC-MW04S	D of Building 191-A	4	13	3 to 13
NA	MPT-TC-MW05S	D of Building 191-A	2	12.5	2.5 to 12.5
NA	MPT-TC-MW06S	D of Building 191-A	2	12.5	2.5 to 12.5
20	MPT-20-MW01S	U of Building 191-A	2	15.5	5 to 15
20	MPT-20-MW02S	U of Building 191-A	2	14.2	4 to 14
20	MPT-20-MW03S	U of Building 191-A	2	14	3 to 13
21	MPT-21-MW01S	U of Building 191-A	2	15.5	5 to 15
21	MPT-21-MW02S	U of Building 191-A	2	15.5	5 to 15
21	MPT-21-MW03S	U of Building 191-A	2	15.5	5 to 15

Notes:

SWMU = solid waste management unit.

TCE = trichloroethene.

bis = below land surface.

NA = not applicable.

U = hydraulic upgradient.

D = hydraulic downgradient.

S = hydraulic sidegradient.

### Table 3 Average Groundwater Velocities at Building 191

SWMU Assessment Report for TCE Release near Building 191 U.S. Naval Station Mayport, Florida

		,,,	-,		
Location	Hydraulic Conductivity (ft/day)	Estimated Gradient <sup>1</sup> (ft/ft)	Estimated Effective Porosity	Estimated Linear Velocity (ft/day)	Estimated Linear Velocity (ft/year)
MPT-TC-MW01S	²11.5	0.011	0.35	0.36	132
MPT-TC-MW02S	²14.8	0.011	0.35	0.47	170
MPT-TC-MW03S	<sup>2</sup> 20.5	0.011	0.35	0.64	235
MPT-TC-MW04S	²11.4	0.011	0.35	0.36	131
MPT-TC-MW05S	<sup>2</sup> 8.4	0.011	0.35	0.26	96
MPT-TC-MW06S	<sup>2</sup> 1.4	0.011	0.35	0.04	16
MPT-20-MW01S	<sup>2</sup> 3.6	0.0064	0.35	0.07	24
MPT-20-MW02S	<sup>2</sup> 2.3	0.0064	0.35	0.04	15
MPT-20-MW03S	²2.5	0.0064	0.35	0.05	17
MPT-21-MW01S	²7.8	0.0064	0.35	0.14	52
MPT-21-MW02S	²4.0	0.0064	0.35	0.07	27
MPT-21-MW03S	²4.1	0.0064	0.35	0.07	27

<sup>1</sup> Based on synoptic water table elevations on July 19, 1995.

Notes: SWMU = solid waste management unit.

TCE = trichloroethene. ft/day = feet per day. ft/ft = foot per foot. ft/year = feet per year.

<sup>&</sup>lt;sup>2</sup> In situ conductivity measurement, July 1995.

## Table 4 Organic Analytes Detected in Surface Soil Samples at Building 191

SWMU Assessment Report for TCE Release near Building 191 U.S. Naval Station Mayport, Florida

		Mayport, Piorida			
Analytical Batch Number:	R9971	R9971	R9971	R9971	R9971
Sample Location:	MPT-TC-SS01	MPT-TC-SS02	MPT-TC-SS03	MPT-TC-SS04	MPT-TC-\$S04
Sample Number:	TCS00101	TCS00201	TC\$00301	TCS00401	TCS00401DUF
Date Sampled:	31-MAY-95	31-MAY-95	31-MAY-95	31-MAY-95	31-MAY-95
Sample Depth (ft bis):	0 to 1	0 to 1	0 to 1	0 to 1	0 to 1
Volatile Organic Compounds	(μg/kg)				
Methylene chloride	-	2 J	· <b>–</b>	-	-
Semivolatile Organic Compou	inde (µg/kg)				
Dimethylphthalate	-	110 J	-	-	
Phenanthrene	71 J	-	-	57 J	-
Fluoranthene	300 J	-	64 J	110 J	130 J
Pyrene	220 J	-	42 J	67 J	86 J
Benzo(a)anthracene	130 J	_	-	51 J	64 J
Chrysene	210 J	-	47 J	63 J	90 J
Benzo(b)fluoranthene	230 J	_	-	_	100 J
Benzo(k)fluoranthene	230 J	_	_	-	110 J
Benzo(a)pyrene	180 J	_	_	_	82 J
Indeno(1,2,3-cd)pyrene	87 J	-	_	-	
Benzo(g,h,i)perylene	85 J	-	-	-	
Pesticides/PCBs (µg/kg)					
Heptachlor	-	_	_	1.3 J	1.2 J
Heptachlor epoxide	-	-	-	8.7	8.9
4,4-DDE	_	-		2.3	2
Chlordane	12	-	-	93	91
Arocior-1260	160	-	25 J	170	150

Notes: SWMU = solid waste management unit.

TCE = trichloroethene.

DUP = duplicate.

ft bis = feet below land surface.  $\mu g/kg$  = micrograms per kilogram.

- = analyte not detected.

J = estimated value.

PCB = polychlorinated biphenyls.

DDE = dichlorodiphenyldichloroethene.

### Table 5 Inorganic Analytes Detected in Surface Soil Samples at Building 191

SWMU Assessment Report for TCE Release near Building 191 U.S. Naval Station Mayport, Florida

Analytical Batch Number:	<b>R997</b> 1	R9971	R9971	R9971	R9971
Sample Location:	MPT-TC-SS01	MPT-TC-SS02	MPT-TC-SS03	MPT-TC-SS04	MPT-TC-SS04
Sample Number:	TCS00101	TCS00201	TCS00301	TCS00401	TCS00401DUP
Date Sampled:	31-MAY-95	31-MAY-95	31-MAY-95	31-MAY-95	31-MAY-95
Sample Depth (ft bis):	0 to 1	0 to 1	0 to 1	0 to 1	0 to 1
Inorganics (mg/kg)				<del></del>	
Arsenic	1.6 J	_	_	-	-
Barium	<b>56</b> .7	4.4 J	7.7 J	4.2 J	3.4 J
Beryllium	0.08 J	0.09 J	0.1 J	0.12 J	-
Cadmium	0.44 J	-	_	-	-
Chromium	12.8	3	2.4	3.3	2.1 J
Cobalt	0.76 J	-	_	-	-
Copper	8.9	3.3 J	4.3 J	2.8 J	1.9 J
Lead	21.5	3.6	16.4	7.2	9.3
Mercury	-	_	-	-	0.03 J
Nickel	3.6 J	-	2.1 J	-	1.8 J
Selenium	-	_	-	0.2 J	-
Tin	-	-	-	5.7 J	-
Vanadium	5.4 J	3.3 J	4.3 J	2.9 J	2.7 J
Zinc	48.2	10.7	15.3	10.6	9.7
Cyanide	0.11 J	0.09 J	0.14 J	0.12 J	0.15 J

Notes:

SWMU = solid waste management unit.

TCE = trichloroethene.

DUP = duplicate.

ft bis = feet below land surface.

mg/kg = milligrams per kilogram.

- = analyte not detected.

J = estimated value.

# Table 6 Organic Analytes Detected in Subsurface Soil Samples at Building 191

SWMU Assessment Report for TCE Release near Building 191 U.S. Naval Station Mayport, Florida

Analytical Batch Number: Sample Location: Sample Number: Date Sampled:	R9971 MPT-TC-BS01 TCB00103 31-MAY-95	R9971 MPT-TC-BS02 TCB00203 31-MAY-95	R9971 MPT-TC-BS03 TCB00303 31-MAY-95	R9971 MPT-TC-BS04 TCB00403 31-MAY-95
Sample Depth (ft bis):	2 to 3	2 to 3	2 to 3	2 to 3
Volatile Organic Compounds	(µg/kg)			
Carbon disulfide	1 J	-	-	-
Methylene chloride	2 J	4 J	4 J	1 J
Trichlorofluoromethane	_	-	_	2 J
Pesticides/PCBs (µg/kg)	0			
Chlordane			-	19

Notes: SWM

SWMU = solid waste management unit.

TCE = trichloroethene.

ft bis = feet below land surface.  $\mu$ g/kg = micrograms per kilogram.

J = estimated value.
-- = analyte not detected.

PCB = polychlorinated biphenyls.

## Table 7 Inorganic Analytes Detected in Subsurface Soil Samples at Building 191

SWMU Assessment Report for TCE Release near Building 191 U.S. Naval Station Mayport, Florida

	, , , , , , , , , , , , , , , , , , , ,			
Analytical Batch Number:	R9971	R9971	R9971	R9971
Sample Location:	MPT-TC-BS01	MPT-TC-BS02	MPT-TC-B\$03	MPT-TCBS04
Sample Number:	TCB00103	TCB00203	TCB00303	TCB00403
Date Sampled:	31-MAY-95	31-MAY-95	31-MAY-95	31-MAY-95
Sample Depth (ft bis):	2 to 3	2 to 3	2 to 3	2 to 3
Inorganics (mg/kg)	<del></del>			
Barium	4.1 J	2.2 J	2.7 J	1.9 J
Beryllium	0.07 J	0.14 J	0.15 J	-
Chromium	-	2.1 J	1.9 J	1.7 J
Copper	2.2 J	2.1 J	1.4 J	1 J
Lead	0.63 J	0.67 J	1.3	1.1
Tin	-	4.4 J	-	4.8 J
Vanadium	1.8 J	1.4 J	1.9 J	1.8 J
Zinc	-	2.8 J	3.3 J	3.4 J
Cyanide	0.09 J	0.13 J	0.17 J	0.15 J

Notes:

SWMU = solid waste management unit.

TCE = trichloroethene.

ft bis = feet below land surface. mg/kg = milligrams per kilogram.

J = estimated value.

- = analyte not detected.

### Table 8 Groundwater Field Screening Results

SWMU Assessment Report for TCE Release near Building 191 U.S. Naval Station Mayport, Florida

Groundwater Sample Location	Tetrachloroethene $\mu_{\mathcal{G}}/t$	Toluene µg/1	Trichloroethene $\mu g/t$
TCQ001		1.6 J	-
TCQ002	445.0 E	1.0	2.9
TCQ003	44.1 E	2.5	2.3
TCQ004	34.9 E	2.2	7.9
TCQ005		1.8	-
TCQ006	-	_	-
TCQ007	-	1.1	<del>-</del>
TCQ008	-	1.4	
TCQ010	<u></u>	1.0	-
TCQ011	-	-	-
TCQ012	-	-	-
TCQ013	-	1.9	-
TCQ014	-	-	_
TCQ015	_	<u></u>	

Notes: SWMU = solid waste management unit.

TCE = trichloroethene.  $\mu$ g/t = micrograms per liter. = analyte not detected.

J = estimated value, continuing calibration standard exceeded percent D criteria.

E = estimated value, concentration outside calibration range.

Sample TCQ009 was not collected.

	Water Qu	Table 9 Water Quality Indicator Parameters for Groundwater Samples at Bullding 191	Table 9 rameters for Gro	9 roundwater San	nples at Bullding	191	
		SWMU Assess	ment Report for TCE Rele U.S. Naval Station Mayport, Rorida	SWMU Assessment Report for TCE Release near Building 191 U.S. Naval Station Mayport, Florida	ling 191		
Analytical Batch Number:		RA077	RA077	RA077	FA077	RA077	FA077
Sample Location:		MPT-TC-MW01S	MPT-TC-MW02S	MPT-TC-MW03S	MPT-TC-MW04S	MPT-TC-MW05S	MPT-TC-MW06S
Sample Number:		TCG00101	TCG00201	TCG00301	TCG00401	TCG00501	TCG00601
Date Sampled:	Units	26-JUN-95	27~JUN-95	27-JUN-95	27-JUN-95	26-JUN-95	26-JUN-95
Water Quality Parameters (mg/f	ng/f)				<u> </u>		
Alkalinity as CaCO,	(mg/1)	460	147	200	196	258	280
Ammonla as N	(mg/1)	‡	ı	1	ı	į	ţ
Chloride	(mg/£)	18.5	30	27.4	10.9	23.1	19.8
Hardness as CaCO <sub>3</sub>	(#/Bm)	505	253	301	224	309	327
Nitrate/Nitrite as N	(mg/1)	0.27	0.29	ı	0.24	2.28	0.32
Phosphorous as P, Total	(mg/1)	0.61	0.63	0.48	0.1	0.34	0.21
Sulfate	(1/6m)	60.2	98.1	96.6	33.1	64.6	45.7
Total Dissolved Solids	(J/Bm)	631	340	381	280	425	410
Total Kjeldahl Nitrogen	(#/BW)	1.5	:	1	9.0	0.4	9:0
Total Organic Carbon	(J/Bm)	19.5	8.4	3.9	5.6	6.5	6.9
Color	Alpha	100	20	15	99	20	20
푑	Standard	6.91	7.48	7.37	7.95	7.33	7,48
Notes: SWMU = solid waste management unit.  TCE = trichloroethene.  S = S as a suffix in the location identificat typically 5 to 15 feet below land surface.  mg/t = milligrams per liter.  CaCO <sub>3</sub> = calcium carbonate.  N = nitrogen.  = analyte not detected.  P = phosphorous.	ite management ene. 1 the location ide eet below land si 3 per liter. carbonate.	SWMU = solid waste management unit.  S = S as a suffix in the location identification indicates the well is screened in the shallow surficial aquifer, typically 5 to 15 feet below land surface.  mg/t = milligrams per liter.  CaCO <sub>3</sub> = calcium carbonate.  N = nitrogen.  = analyte not detected.  = chosohorous.	re well is screened i	n the shallow surlic	al aquifer,		
· · · · · · · · · · · · · · · · · · ·							

Sumir	Summary of Water G	luality Indicator	Table 10 Water Quality Indicator Parameters for Groundwater Samples at Building 191	undwater Sample	s at Building 1	16
		SWMU Assessment	SWMU Assessment Report for TCE Release near Building 191 U.S. Naval Station Mayport, Florida	near Building 191		
Analyte	Frequency of Detection <sup>1</sup>	Range of Detected Concentrations	Range of Reporting Limits	Mean of Detected Concentrations <sup>2</sup>	Water Quality Criteria³	Exceeds Water Quality Criteria Benchmark (Yes/No)
Weter Quality Parameters {mg/f}*	19/61					
Total Organic Carbon	9/9	3.9 - 19.5	R	7.9	NS	SN
Alkalinity as CaCO,	9/9	147 - 460	N.	257	SN	NS
Ammonia as N	1/6	7	0.3 - 0.3	<del>.</del>	SN	SN
Chloride	9/9	10.9 - 30	ű.	21.6	250	<b>₽</b>
Hardness as CaCO,	9/9	224 - 505	N E	320	SN	SN
Sulfate	9/9	33.1 - 98.1	Æ	66.4	250	₽
Total Dissolved Solids	9/9	280 - 631	N.	411	200	Yes
Total Kieldahl Nitrogen	4/6	0.4 - 1.5	0.3 - 0.3	0.73	SN	SN
Nitrote / Nitrite as N	2/6	0.24 - 2.28	0.1 - 0.1	0.68	01	No
Phosphorous as P. total	9/9	0.1 - 0.63	N.	0.4	NS	SN
Color	9/9	15 - 100	N.	34.2	NS	SN
, #	9/9	6.91 - 7.95	Ä	7.4	6.5 to 8.5	No
1 Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values, "R" qualitier). 2 The mean of detected concentrations is the arithmetic mean of all samples in which the analyte was detected concentrations is the arithmetic mean of all samples in which the analyte was detected concentrations is the analyte was not detected ("U" or "U," qualitiers) and rejected ("R" qualitier). 3 Value is a groundwater guidance concentration from the Florida Department of Environmental Protection, Groundwater Guidance Concentrations, June 1994. 4 Units for color and ph are APHA and SU, respectively.	the number of same centrations is the a right was no idance concentrations APHA and SU, rest	ples in which the an rithmetic mean of a or detected ("U" or "I on from the Florida I	alyte was detected divided is samples in which the a UJ" qualifiers, and rejected peartment of Environment.	od by the total number nalyte was detected, in d ("R" qualifier). intal Protection, Groun	of samples analyze cluding values qual dwater Guidance Co	d (excluding rejected lifed as "J"; It does not ncentrations, June 1994.
Notes: Environmental sam MPT-TC-MW06S.	ples included in th	is evaluation are MF	Environmental samples included in this evaluation are MPT-TC-MW01S, MPT-TC-MW02S, MPT-TC-MW03S, MPT-TC-MW04S, MPT-TC-MW05S, and MPT-TC-MW06S.	W02S, MPT-TC-MW03	S, MPT-TC-MW04S,	MPT-TC-MW05S, and
SWMU = solid waste manag TCE = trichloroethene. mg/t = milligrams per fiter. NR = no nondetection range NS = no screening concentr	SWMU = solid waste management unit. TCE = trichloroethene. mg/t = milligrams per fiter. NR = no nondetection range, see Range of	SWMU = solid waste management unit.  TCE = trichloroethene.  mg/t = milligrams per fiter.  NR = no nondetection range, see Range of Detected Concentrations.  NS = no screening concentration available.		CaCO <sub>3</sub> = calcium carbonate. N = nitrogen. APHA = American Public Health Association. SU = standard units.	ate. Health Association.	

### Table 11 Organic Analytes Detected in Groundwater Samples at Building 191

SWMU Assessment Report for TCE Release near Building 191 U.S. Naval Station Mayport, Florida

	~7.5	<u> </u>		
Analytical Batch Number:	RA077	RA077	RA077	RA077
Sample Location:	MPT-TC-MW02S	MPT-TC-MW04\$	MPT-TC-MW05S	MPT-TC-MW05S
Sample Number:	TCG00201	TCG00401	TCG00501	TCG00501DUP
Date Sampled:	27-JUN-95	27-JUN-95	26-JUN-95	26-JUN-95
Volatile Organic Compounds	(µg/£)			
1,2-Dichloroethene (total)	_	1 J	1 J	1 J
Bromodichloromethane	5	_	-	•-
Chloroform	11	-	_	_
Dibromochloromethane	1 J	_	-	-
Tetrachloroethene		26	100	<b>7</b> 3
Trichloroethene		9	10	8

Notes:

SWMU = solid waste management unit.

TCE = trichloroethene.

S = S as a suffix in the location identification indicates the well is screened in the shallow surficial aquifer, typically 3 to 13 feet below land surface.

DUP = duplicate.

 $\mu$ g/ $\ell$  = micrograms per liter.

- = analyte not detected.

J = estimated value.

	Inorgan	ic Analytes Dete	Table 12 ected in Ground	Table 12 Inorganic Analytes Detected in Groundwater Samples at Building 191	: Building 191		
		SWMU Assessm	ent Report for TCE Rele: U.S. Naval Station Mayport, Plorida	SWMU Assessment Report for TCE Release near Building 191 U.S. Naval Station Mayport, Florida	191		
Analytical Batch Number:	RA077	HA077	RA077	HA077	FA077	RA077	PA077
Sample Location:	MPT-TC-MW01S	MPT-TC-MW02S	MPT-TC-MW03S	MPT-TC-MW04S	MPT-TC-MW05S	MPT-TC-MW05S	MPT-TC-MW06S
Sample Number:	TCG00101	TCG00201	TCG00301	TCG00401	TCG00501	TCG00501DUP	TCG00601
Date Sampled:	26-JUN-95	27-JUN-95	27-JUN-95	27-JUN-95	26-JUN-95	26-JUN-95	26-JUN-95
Inorganica (µg/1)				ı			
Arsenic	62.4	1.2 J	0.9 ህ	6 J	5.6 J	6.1 J	1.6 J
Barium	J 8.6	8.7 J	2.8 J	2.8 J	4.7 J	4.5 J	7.8 J
Beryllium	ı	1	ł	0.36 J	1	ı	;
Calcium	167,000	61,200	79,100	77,000	106,000	105,000	100,000
kon	4,950	1	:	299	98.2 J	99.5 J	280
Magnesium	11,300	22,700	23,500	6,530	13,500	13,300	13,500
Manganese	543	. 88. L	1.5 J	142	4 J	3.9 J	80.8
Selenium	;	,	1	1	J 62.0	ı	ı
Silver	L 7.1	ł	;	;	:	;	:
Sodium	16,800	17,200	19,800	7,450	12,700	12,600	15,500
Vanadium	6.3	8.4 J	5.3 J	6.7 J	8.8 J	8.4 J	3.4 J
Cyanide	:	2 J	2.6 J	;	1	:	2 )
Notes: SWMU = solid waste n TCE = trichloroethene. S = S as a suffix in the	SWMU = solid waste management unit. TCE = trichloroethene. S = S as a suffix in the location identification indicates the well is screened in the shallow surficial aquifer,	tion indicates the we	II is screened in the s	shallow surficial aquif	je je		
typically 5 to 15	typically 5 to 15 feet below land surface. UP = duplicate.						
$\mu g/t = micrograms per liter.$ J = estimated value.	ns per liter. Je.						
<ul><li>analyte not detected.</li></ul>	stected.						

		Preliminary R	isk Screen	Table 13 Preliminary Risk Screening of Surface Soll Samples from Building 191	3 Soil Samp	les from Bu	191 191			
		NS	WMU Assessm	SWMU Assessment Report for TCE Release near Building 191 U.S. Naval Station Mayport, Florida	Release near ation rida	Building 191				
Analyte	Frequency of Detection <sup>1</sup>	Range of Detected Concentrations <sup>2</sup>	Range of Reporting Limits	Mean of Detected Concentrations <sup>3</sup>	Background Screening Value	Region III RBCs <sup>5</sup> Residential	FDEP Soil Cleanup Goals <sup>e</sup> Residential	FDEP Soil Cleanup Goals <sup>6</sup> Industrial	Exceeds Residential Benchmark (Yes/No)	Exceeds Industrial Benchmark (Yes/No)
Voletile Organic Compounds (µg/kg)	ounde (vg/kg)									
Methylene chloride	1/4	O)	5-6	8	Q	85,000	16,000	23,000	2	S <sub>O</sub>
Semivolatile Organic Compounds (µg/kg)	ompounds (vg/l	kg)								·
Benzo(a)anthracene	2/4	257.5 - 130	340 - 380	93.8	Q	880	1,400	4,900	운	Š
Benzo(a)pyrene	2/4	²136 - 180	190 - 380	158	Q	88	<b>1</b> 00	200	Yes	<del>S</del>
Benzo(b)fluoranthene	2/4	<sup>2</sup> 145 - 230	190 - 380	188	Q	880	1,400	2,000	Š	운
Benzo(g,h,i)perylene	1/4	85	340 - 380	82	Q	SN	14,000	20,000	온	ž
Benzo(k)fluoranthene	2/4	150 - 230	190 - 380	190	물	8,800	14,000	48,000	온	Š
Chrysene	3/4	47 - 210	380 - 380	Ξ	9	88,000	140,000	200,000	2	<del>2</del>
Dimethyl-phthalate	1/4	110	340 - 375	110	Q.	63,000,000	63,000,000	A A	<del>8</del>	2
Fluoranthene	3/4	64 - 300	380 - 380	161	Q	3,100,000	2,900,000	48,000,000	₽	Š
Indeno(1,2,3-cd) pyrene	1/4	87	340 - 380	87	2	880	1,400	9,000	8	Š
Phenanthrene	2/4	71 - 2121	185 - 380	96	S	NS	1,700,000	21,000,000	Ş	g
Pyrene	3/4	42 - 220	380 - 380	113	Q	2,300,000	2,200,000	41,000,000	Ş	£
Pesticides PCBs (µg/kg)	_									
4,4'-DDE	1/4	22.15	0.7 - 0.78	2.2	2.3	1,900	3,000	11,000	2	2
Aroctor - 1260	3/4	25 - 160	20 - 20	115	QN	83	006	3,500	Yes	ş
Chlordane	2/4	12 - 32	7 - 7.8	25	QN N	490	800	3,000	S <sub>O</sub>	2
Heptachlor	1/4	1.25	0.7 - 0.78	1.3	QV	140	200	200	No.	8
See notes at end of table	Je.						·			

		Prelimi	nary Risk Sc	Table 13 (Continued) Preliminary Risk Screening of Surface Soil Samples from Building 191	Table 13 (Continued)	mples from	Building 19	-		
			SWMU AS	SWMU Assessment Report for TCE Release near Building 191 U.S. Navai Station Mayport, Florida	eport for TCE Release r U.S. Naval Station Mayport, Florida	near Building 1	16			·
Analyte	Frequency of Detection <sup>1</sup>	Range of Detected Concentrations <sup>2</sup>	Range of Reporting Limits	Mean of Detected Concentrations <sup>3</sup>	Background Screening Value <sup>4</sup>	Region III RBCs <sup>5</sup> Residential	FDEP Soil Cleanup Goals <sup>®</sup> Residential	FDEP Soil Cleanup Goals <sup>®</sup> Industrial	Exceeds Residential Benchmark (Yes/No)	Exceeds Industrial Benchmark (Yes/No)
Pesticides/PC	Pesticides/PCBs (µg/kg) (Continued)	tinued)								
Heptachlor epoxide	1/4	28.88 8.08	0.7 - 0.78	8.8	Q	70	100	300	2	£
Inorganice (mg/kg)	ng/kg)									
Arsenic	1/4	1,6	0.46 - 1	1.6	<u>Q</u>	70.37	0.7	3.1	Yes	2
Barlum	4/4	23.8 - 56.7	ĸ	18.2	5.6	5,500	5,200	84,000	Š	2
Beryllum	4/4	<sup>2</sup> 0.07 - 0.1	0.035 - 0.035	0.09	0.16	0.15	°0.2	0.1.0	8	<u>8</u> .
Cadmium	1/4	0.44	0.25 - 0.28	0.44	O.	8	37	900	온	2
Chromium	4/4	2.4 - 12.8	Æ	5.2	2.6	330	<b>1</b> 290	*430	S S	8
Cobalt	1/4	0.76	0.64 - 0.72	0.76	Q.	4,700	4,700	110,000	N N	8
Copper	4/4	2.3 - 8.9	Ä	4.7	2.2	2,900	NS	SN	8	2
Lead	4/4	3.6 - 21.5	R	12.4	Q	10400	200	1,000	온	2
Mercury	1/4	20.022	0.015 - 0.03	0.05	Q	R	ឌ	480	2	2
Nickel	3/4	21.2 - 3.6	0.65 - 1.3	2.3	QN	1,600	1,500	26,000	2	S S
Selenium	1/4	20.12	0.055 - 0.12	0.13	1.36	390	390	006'6	S S	S S
i i	1/4	23.62	1.55 - 3.1	3.6	Q	4,700	44,000	670,000	S.	S
Vanadium	4/4	22.8 - 5.4	¥	4	4	220	490	4,800	2	2
Zinc	4/4	²10,15 - 48.2	띺	21.1	2.6	23,000	23,000	260,000	<u>8</u>	2
Cyanide	4/4	0.09 - 0.14	K.	0.12	Q	160	1,600	40,000	운	2
See notes at end of table.	end of table.									

## Table 13 (Continued) Preliminary Risk Screening of Surface Soll Samples from Building 191

SWMU Assessment Report for TCE Release near Building 191

U.S. Naval Station Mayport, Florida Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values, "R" qualifier). Values is the average of the detected concentrations in a sample and its duplicate. For duplicate samples having one nondetected value, 1/2 the Contract-Required Quantitation Limit is used as a surrogate.

3 The mean of detected concentrations is the arithmetic mean of all samples in which the analyte was detected, including values qualified as "J"; it does not include those samples where the analyte was not detected ("U" or "UJ" qualifiers) and rejected ("R" qualifier).

4 The background screening concentration is twice the average of detected concentrations for inorganic analytes in background samples. Organic values are only one time the mean of detected concentrations, and are included for comparison purposes only. Surface soil background samples are MPT-B-SS1, MPT-B-SS1DUP, MPT-B-SS2, MPT-B-SS3, MPT-B-SS4, MPT-B-SS5, and MPT-B-SS6.

Screening [EPA/903/R-93-001]) was used for screening. Actual values are taken from the USEPA Region III RBC Tables dated February 9, 1995 and are based on a cancer risk For all chemicals except the essential nutrients (calcium, iron, magnesium, potassium, and sodium), U.S. Environmental Protection Agency (USEPA) Region III risk-based screening concentrations (RBCs) for residential surface soil exposure per January 1993 guidance (Selecting Exposure Routes and Contaminants of Concern by Risk-Based of 10.6 and for noncarcinogens a hazard quotient (HQ) of 1.

Values are taken from the Florida Department of Environmental Protection memorandum, Soil Cleanup Goals for Florida, dated September 27, 1995. The values are for either a residential or industrial worker soil exposure and are based on a cancer risk of 10° and for noncarcinogens an HQ of 1.

7 The risk-based concentration is based on carcinogenic effects.

Based on dermal adsorption of 0.0001

Chromlum in hexavatent form.

No RBC is available for lead because of the lack of toxicity data. The value provided is based on USEPA's recommended target cleanup level for Superfund sites (USEPA,

Environmental samples included in this evaluation are MPT-TC-SS01, MPT-TC-SS02, MPT-TC-SS03, MPT-TC-SS04 and MPT-TC-SS04DUP, Notes:

SWMU = solid waste management unit TCE = trichloroethene.

PBC = risk-based concentrations.

FDEP = Florida Department of Environmental Protection.

µg/kg = micrograms per kilogram.

ND = analyte not detected in background surface soil sample.

mg/kg = milligrams per kilogram. NR = no reporting limits avaitable.

PCBs = polychlorinated biphenyls. 4,4'-DDE = dichlorodiphenyldichloroethene.

NS = no screening concentration. NA = value is greater than 1x10°.

		Preliminary Ris	k Screenir	Table 14 Risk Screening of Subsurface Soil Samples from Building 191	14 ce Soil Sam	iples from l	3uilding 19	_		
		ซ	WMU Assessn	SWMU Assessment Report for TCE Release near Building 191 U.S. Naval Station Mayport, Fforida	E Release near itation orida	Building 191				
Analyte	Frequency of Detection	Range of Detected Concentrations	Range of Reporting Limits	Mean of Detected Concentrations <sup>2</sup>	Background Screening Value <sup>3</sup>	Region III RBCs <sup>4</sup> Industrial	FDEP Cleanup Goals <sup>5</sup> Residential	FDEP Clearup Goals <sup>s</sup> Industrial	Exceeds Residential Benchmark (Yes/No)	Exceeds Industrial Benchmark (Yes/No)
Voletile Organic Compounds (µg/kg)	inds (vg/kg)				i					
Carbon disulfide	1/4	-	9-9	-	ND.	200,000,000	5,200	34,000	2	2
Methylene chloride	4/4	1 - 4	¥	2.8	2	440,000	16,000	23,000	2	운
Trichlorofluoromethane	1/4	81	9-9	2	2	610,000,000	6,600	44,000	<del>S</del>	2
Pesticides/PCBs (µg/kg)									:	;
Chlordane	1/4	19	8.2 - 8.6	19	Q	4,400	800	3'000	운	2
Inorganics (mg/kg)										:
Barium	4/4	1.9 - 4.1	ď	2.7	7.2	140,000	5,200	84,000	운	2
Beryllium	3/4	0.07 - 0.15	0.07 -	0.12	0.14	<del>≓</del> 6	ρ'Ν	ř. o	2	S N
Chromium	3/4	1.7 - 2.1	0.4 - 0.4	1.9	3.4	710,000	7290	7430	운	8
Copper	4/4	1 - 2.2	Ä	1.7	3.6	76,000	SS	SN	₽	8
pear	4/4	0.63 - 1.3	Æ	0.93	2.8	400	200	1,000	S	S.
<u> </u>	2/4	4.4 - 4.8	3.2 - 3.3	4.6	5.4	200,000	44,000	000'29	8	운
Vanadium	4/4	1.4 - 1.9	Ä	1.7	3.2	14,000	490	4,800	S	2
Zinc	3/4	2.8 - 3.4	2.4 - 2.4	3.2	4.8	610,000	23,000	260,000	8	운
Cyanide	4/4	0.09 - 0.17	EN.	0.14	99.0	41,000	1,600	40,000	2	2
See notes at end of table.	es l									

## Preliminary Risk Screening of Subsurface Soil Samples from Building 191 Fable 14 (Continued)

SWMU Assessment Report for TCE Release near Building 191 U.S. Naval Station Mayport, Florida ' Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values, "A" 2 The mean of detected concentrations is the arithmetic mean of all samples in which the analyte was detected, including values qualified as "J"; it does not include

time the mean of detected concentrations, and are included for comparison purposes only. Subsurface soil background samples are MPT-B-BS1, MPT-B-BS1DUP, MPT-3 The background screening concentration is twice the average of detected concentrations for Inorganic analytes in background samples. Organic values are only one those samples where the analyte was not detected ("U" or "UJ" qualifiers) and rejected ("R" qualifier).

B-BS4, MPT-B-BS5, and MPT-B-BS6

risk-based screening concentrations (RBCs) for industrial surface soll exposure per January 1993 guidance (Selecting Exposure Routes and Contaminants of Concern by Risk-Based Screening [EPA/903/R-93-001]) was used for screening. Actual values are taken from the USEPA Region III RBC Tables dated February 9, 1995, and are \* For all chemicals except the essential nutrients (calcium, iron, magnesium, potassium, and sodium), U.S. Environmental Protection Agency (USEPA) Region III based on a cancer risk of 10° and for noncarcinogens a hazard quotient (HQ) of 1.

5 Values are taken from the Florida Department of Environmental Protection memorandum, Soil Cleanup Goals for Florida, dated September 27, 1995. The values are for either a residential or industrial worker soil exposure and are based on a cancer risk of 10° and for noncarcinogens an HQ of 1.

Based on dermal absorption of 0.0001 Chromium in hexavalent form.

No RBC is available for lead because of the lack of toxicity data. The value provided is based on USEPA's recommended target cleanup level for Superfund sites

Environmental samples Included in this evaluation are MPT-TC-BS01, MPT-TC-BS02, MPT-TC-BS03 and MPT-TC-BS04. Notes:

SWMU = solid waste management unit.

TCE = trichloroethene.

ug/kg = micrograms per kilogram.

ND = analyte not detected in background surface soil sample.

NR = no reporting limits available.

PCBs = polychlorinated biphenyls.

mg/kg = milligram per kilogram.

VS = no screening concentration.

<b>a</b>	stimated Hur	Table 15 Estimated Human Health Cancer Risk Based on Maximum Values for Chemicals Detected in Surface Soil Samples at Building 191	Table 15 ncer Risk Based urface Soil Sam	e 15 Ised on Maxi Samples at B	mum Value! luilding 191	s for Chemica	<u>s</u>	
		SWMU Assessm	ent Report for TCE Rele U.S. Naval Station Mayport, Florida	SWMU Assessment Report for TCE Release near Building 191 U.S. Naval Station Mayport, Florida	r Building 191			
				Residentia	Residential Exposure		Industrial	Industrial Exposure
Analyte		Maximum Detected Concentration	USEPA Region III RBC2	Estimated Residential Cancer Risk <sup>3</sup>	FDEP Soil Cleanup Goal <sup>4</sup>	Estimated Residential Cancer Risk³	FDEP Soil Cleanup Goal	Estimated Industrial Cancer Risk <sup>3</sup>
Volatie Organic Compounds (µg/kg)	(vg/kg)							
No analytes exceeded screening criteria	ing criteria							
Semivolatile Organic Compounds (µg/kg)	unds (vg/kg)							
Benzo (a) pyrene		180	88	2E-6	<del>0</del>	2E-6	200	4E-7
Pesticides and PCBs (µg/kg)		;	ć	ų U	ć	, 10	2 500	я. В.
Aroclor-1260		160	, ,	2E-0	9	/-37	ooc's	P J
Inorganics (mg/kg)		,	,	ŗ	ř	ų L	č	55.7
Arsenic		<del>6</del> .	0.37	45-6	). (1)	2E-0	<del>-</del>	)-10 10
Estimated Cancer Risk				8E-6		4E-6		1E-6
<sup>1</sup> The maximum value is from Table 13. <sup>2</sup> USEPA Region III risk-based screening concentrations (RBCs) for residential surface soil exposure per January 1993 guidance (Selecting Exposure Routes and Contaminants of Concern by Risk-Based Screening [EPA/903/R-93-001]) was used for screening. Actual values are taken from the USEPA Region III RBC and Contaminants of Concern by Risk-Based Screening [EPA/903/R-93-001]) was used for screening. Actual values are extend the Library 9, 1995, and are based on a cancer risk of 10°. <sup>3</sup> The cancer risk is an estimated value based on the assumptions used to determine the human health-based risk values. <sup>4</sup> Values are taken from the Florida Department of Environmental Protection memorandum, Soil Cleanup Goals for Florida, dated September 27, 1995. The values are for either a residential or industrial worker soil exposure and are based on a cancer risk of 10°.	Table 13.  I screening conc  I by Risk Based  5, and are base  the value base  forida Departme  thal or industrial	13. sing concentrations (RBCs) for residential surface soil exposure per Jask-Based Screening [EPA/903/R-93-001]) was used for screening. Act are based on a cancer risk of 10°. use based on the assumptions used to determine the human health-based on the assumptions used to determine the human health-based on the assumptions are determined in Environmental Protection memorandum, Soil Cleanup (Industrial worker soil exposure and are based on a cancer risk of 10°.	or residential su 33/R-93-001]) w of 10° is used to deter I. Protection mer ire and are base	irface soil exposi as used for scree mine the human morandum, Soil	ure per January ening. Actual v health-based n Cleanup Goals	r 1993 guidance ( alues are taken fr isk values. for Florida, dated	Selecting Expos om the USEPA   I September 27,	ure Routes Region III RBC 1995. The
Notes: SWMU = solid waste management unit	te management	unit						
USEPA = U.S. Environmental Protection Agency.	ironmental Prote	ction Agency.						
RBC = risk-based concentration.	concentration.	Section 1 Drottonti	5					
FDEP = Florida Department of Environmental Florection.	partment or ⊏arv ns per kilogram.	ונסוטוואו רוטופטיי	<u>.</u>					
PCB = polychlorinated biphenyl.	ated biphenyl.							
mg/kg = milligrams per kilogram	is per kilogram.							

		Table 16 Preliminary Risk Screening of Groundwater Samples from Building 191	sk Screenir	Table 16	ater Sample	ss from Build	ing 191		
		SWI	MU Assessme	SWMU Assessment Report for TCE Retease near Building 191 U.S. Naval Station Mayport, Florida	Refease near B ation ida	uilding 191			
Analyte	Frequency of Detection <sup>1</sup>	Range of Detected Concentrations <sup>2</sup>	Range of Reporting LImits	Mean of Detected Concentrations <sup>3</sup>	Background Screening Value <sup>4</sup>	Region III RBCs Tap Water <sup>5</sup>	Florida Guldance Concentrations <sup>a</sup>	Exceeds Region III RBCs Benchmark (Yes/No)	Exceeds Florida Guidance Benchmark (Yes/No)
Volatile Organic Compounds (ug/t)	te (vg/t)								
1,2-Dichloroethene (total)	2/6	1 - 1	57 - 57	-	Q.	55	04°	8	2
Bromodichloromethane	1/6	ν.	5 - 5	ß	8	0.17	9.001	Yes	Yes
Chloroform	1/6	=	5-51	=	2.5	0.15	9°t	Yes	Yes
Dibromochloromethane	1/6	-	5-5	-	2	0.13	Loi	Yes	Yes
Tetrachloroethene	5/6	26 - 286.5	5-5	56.3	2	1.1	్ట	Yes	Yes
Trichloroethene	5/6	6 - 6	5-5	Ō	웆	1.6	ຄ	Yes	Yes
Inorganics (µg/f)									
Arsenic	9/9	0.9 - 62.4	Æ	13	8.6	70.038	,20	Yes	Yes
Barium	9/9	2.8 - 9.8	ĸ.	6.1	39.0	2,600	°2,000	Š	2
Beryllium	1/6	0.36	0.3 - 0.3	0.36	9	0.016	<b>P</b>	Yes	2
Calcium	9/9	61,200 · 167- ,000	Œ Œ	98,300	207,466	1,055,398	SZ	8	SN
Iron	4/6	298.8 - 4,950	14.8 - 27.2	1,407	1,728	13,267	1,300	S <sub>o</sub>	Yes
Magnesium	9/9	66,530 - 23,500	Ë	15,155	153,984	118,807	SN	S.	SN
Manganese	9/9	0.84 - 543	Ř	129	210	180	05,,	Yes	Yes
Selenium	1/6	20.52	0.25 - 0.5	0.52	11.8	180	°50	S S	2
Silver	1/6	1.7	1,4 - 1,4	1.7	2	180	11,100	Š	ş
Sodium	9/9	7,450 - 19,800	Ä	14,900	1,519,016	*396,022	160,000	2	<del>S</del>
Vanadium	9/9	3.4 - 78.6	Æ	6.5	9.2	260	1249	8	Se Se
Cyanide	3/6	2 - 2.6	1.5 - 1.5	2.2	1,9	730	°200	S.	운
See notes at end of table.									

# Table 16 (Continued) Preliminary Risk Screening of Groundwater Samples from Building 191

SWMU Assessment Report for TCE Release near Building 191

U.S. Naval Station Mayport, Florida Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values, "R"

2 Asterisk values are the average of the detected concentrations in a sample and its duplicate. For duplicate samples having one nondetected value, 1/2 the Contract-Required Quantitation Limit is used as a surrogate.

The mean of detected concentrations is the arithmetic mean of all samples in which the analyte was detected, including values qualified as "J"; it does not include those samples where the analyte was not detected ("U" or "UJ" qualifiers) and rejected ("R" qualifier).

The background screening concentration is twice the average of detected concentrations for inorganic analytes in background samples. Organic values are only one time the mean of detected concentrations, and are included for comparison purposes only. Surface soil background samples are 01MW001, 08MW005S, 0BMW001S, 0SMW001R, 8MW5S, MPT-1-MW1-1, MPT-S-1-1, S1 and 0SMW001RD.

Contaminants of Concern by Risk-Based Screening [EPA/903/R-93-001]) was used for screening. Actual values are taken from the USEPA Region III RBC Tables dated U.S. Environmental Protection Agency (USEPA) Region III Risk-Based Concentration for tap water per January 1993 guidance (Selecting Exposure routes and February 9, 1995, and are based on a cancer risk of 10° and for noncarcinogens a hazard quotient (HQ) of 1.

Value is a groundwater guidance concentration from the Florida Department of Environmental Protection, Groundwater Guidance Concentrations, June 1994

The risk-based concentration is based on carcinogenic effects.

Essential Nutrient Screening Values: U.S. Naval Station Mayport General Information Report, Volume II of II (ABB-ES, July 1995)

Primary Standard under Florida Administrative Code (FAC), 62-550.310.

Quidance value base on chemical being a carcinogen.

" Guidance value base on chemical being a calcino,
" Secondary Standard under FAC, 62-550.320.

2 Guidance value based on chemical being a systemic toxicant.

Environmental samples included in this evaluation are MPT-TC-MW01S, MPT-TC-MW02S, MPT-TC-MW03S, MPT-TC-MW04S, MPT-TC-MW05S, MPT-TC-Notes:

MW05DUP, and MPT-TC-MW06S.

SWMU = solid waste management unit.

TCE = trichloroethene.

3C = risk-based concentration.

ug/t = micrograms per liter.

NS = no screening concentration. ND = analyte not detected in background surface soil sample.

VR = no range available.

	Estimated Human Healt	Health Cancer Detected	Table 17 h Cancer and Noncancer Risk Based on Maximur Detected in Groundwater Samples at Building 191	7 sk Based on Maxi mples at Building	Table 17 h Cancer and Noncancer Risk Based on Maximum Values for Chemicals Detected in Groundwater Samples at Building 191	micals	
		SWMU Ass	SWMU Assessment Report for TCE Release near Building 191 U.S. Naval Station Mayport, Florida	Release near Building ation rida	191		
Analyte	Maximum Detected Concentration?	USEPA Region III Tap Water RBCs²	Estimated Residential Cancer Risk³	Florida Guldance Concentrations <sup>4</sup>	Estimated Florida Guidance Concentration Cancer Risk³	USEPA Region III Tap Water RBCs <sup>8</sup>	Estimated Hazard Index
Voletile Organic Compounds (µg/f)	ide (ug/f)			,			
Bromodichioromethane	ιρ	0.17	3E-05	9.0	8E-06	SC	S
Chloroform	Ξ	0.15	7E-05	9	2E-06	NC	SC
Dibromochloromethane	-	0.13	7E-06	-	1E-06	NC	NC
Tetrachloroethene	86.5	1.1	8E-05	ო	3E-05	S	NC
Trichloroethene	o	1.6	<b>6E</b> -06	ဗ	3E-06	NC	NC NC
Semivolatile Organic Compounds (µg/t)	(J/B/I) spunodi						
No analytes detected.							
Peeticides and PC8s (µg/1)	=						
No analytes detected.							
Inorganice (mg/f)							
Arsenic	62,4	0.038	2E-03	20	1E-06	ŧ	9
Berylllum	0.36	0.016	2E-05	4	9E-08	SC	NC
Manganese	543	A	AN	N A	NA	180	က
Estimated Cancer Risk			2E-03		4E-05		
Estimated Hazard Index (Noncancer Risk)	Joncancer Risk)						6
<sup>1</sup> The maximum value is from Table 16. <sup>2</sup> USEPA Region III risk-based screening concentrations (RBCs) for tap water per January 1993 guidance (Selecting Exposure Routes and Contaminants of Concern by Risk-Based Screening (EPA/903/R-93-001) was used for screening. Actual values are taken from the USEPA Region III RBC Tables dated February 9, 1995, and are based on a cancer risk of 10.9.	om Table 16. sed screening concentration (001) was used for screening (1997)	ons (RBCs) for tap v ng. Actual values a	vater per January 1993 g	guidance (Selecting Exp A Region III RBC Tables	osure Routes and Contain dated February 9, 1995, s	ninants of Concern band are based on a c	y Risk-Based sancer risk of
The cancer risk is an estimated value based on the assumptions used to determine the human health based risk values.  Value is a groundwater guidance concentration from the Florida Department of Environmental Protection (FDEP), Groundwater Guidance Concentrations, June 1994.  Value is a groundwater guidance concentrations (RBCs) for tap water per January 1993 guidance (Selecting Exposure Routes and Contaminants of Concern by Risk-Based Screening concentrations (RBCs) for tap water per January 1993 guidance (Selecting EPA/903/R-93-001)) was used for screening. Actual values are taken from the USEPA Region III RBC Tables dated February 9, 1995, and are based on a hazard index of the concentration of the concentratio	mated value based on the juidance concentration fro sed screening concentration 001] was used for screen	assumptions used m the Florida Depar ons (RBCs) for tap v ong. Actual values i	to determine the humar rtment of Environmental vater per January 1993 ( are taken from the USEF	n health based risk valu Protection (FDEP), Gro guidance (Selecting Exp A Region III RBC Table	ies. undwater Guidance Conce bosure Routes and Contan s dated February 9, 1995,	antrations, June 1994 ninants of Concern b and are based on a	f. y Risk-Based hazard index of
	tion toomong of the		lucies told - Old	NO - Not colouistad: Chamical and as a carriogon	conception of the		
TOTAL STAND STAND WESTER TOTAL WESTER TO THE STANDARD STA	SVVNIO = SONG Waste management offic. TCE = trichloroethene.		PCB = polychlor	PCB = polychlorinated biphenyl.	de as a carcalogen.		
USEPA = U.S. E	USEPA = U.S. Environmental Protection Agency.	gency.	mg/t = milligra	= milligrams per liter.			
HBC = risk-based concentration.	e concentration. ams per liter.		MA = NOT applic	IVA = NOT applicable, Chemical evaluated as a noticalcinogen.	eu as a noncarcinogen.		
101							

## ATTACHMENT C PROJECT CHRONOLOGY

## Table C-1 Project Chronology

## SWMU Assessment Report for TCE Release near Building 191 U.S. Naval Station Mayport, Florida

When	Action
05/04/93	U.S. Naval Station (NAVSTA) Mayport Safety Officer issued an internal accident report concerning the accidental release of tetrachloroethene near Building 191.
08/26/93	Staff Civil Engineer at NAVSTA, Mayport issued correspondence to the Northeast District Office of the Florida Department of Environmental Protection to report the release of drycleaning fluid (tetrachloroethene) near Building 191 and provided analytical results of samples from the release site.
05/04/94	Public Works Center, Jacksonville, Florida: The Environmental Department issued a memorandum requesting sampling and analytical services, remediation services, and preparation of a map of the tetrachloroethene release site.
06/24/94	Public Works Center, Jacksonville, Florida: The Environmental Department issued a memorandum reporting analytical results and indicated that contamination was not evident at the sampling locations.
08/12/94	Staff Civil Engineer at NAVSTA, Mayport issued correspondence to the Northeast District Office of the Florida Department of Environmental Protection reporting the analysis of asphalt, limerock, and soil samples. In the correspondence it was stated that the "area is clean of contamination and requires no further action." Written concurrence of this opinion also was requested.
08/11/94	Environmental Science and Engineering issued a Contamination Assessment Report to Navy Public Works Center, Jacksonville, Florida. The report was for the assessment of a release from leaking underground fuel lines which serviced a 300-gallon above-ground storage tank. The report indicates that the Building 191 site qualifies for "No Further Action" as outlined in Chapter 17-770. The report also indicated that tetrachloroethene and trichloroethene were detected in a groundwater sample from a background monitoring well at concentrations that exceed their respective Florida groundwater guidance concentrations.

OFT FL

TEL:904-241-6935

Jun 09.93 11:40 No.002 P.01

ACCIDENT REPORT FISC MAYPORT BESIDE BLDG 191A 5/4/93

On the above date at approximately 1500 AKAK John A. hoden from the USS CONSTELLATION punctured a 55 gallon drum of chemicals creating a hazardous spill. The drum contained DRY CLEARING SOLVENT chemical name was, TETRACELOROETHY ERE. Approximately 25 - 30 gallons were spilled, the accident was caused when he attempted to pick up a pallet of drums to move. The torkiff blade punctured the drum. SKCS Montelongo was his supervisor, but was not present. He was notified by another sailor the chemical he was taken to medical to have his feet washed.

## Problems:

- (1) The drums were not stored in the spill containment area.
- (2) Within 130 feet of the spill area was a storm drain.
- (3) AKAN Loden did not attemp to get help to invert the drum creating a larger spill.
- (4) Clean up equipment was not readily available for use.

## Solutions:

- (1) Move all liquid drums to spill containment area.
- (2) have a designated spill containment cart in an easily accessible area with all necessary supplies.
- (3) Review spill procedures with all employees.
- (4) Order a Spilmagnet Drain Cover to be kept on the cart.
- (5) Have the area supervisor check the cort and maintain all supplies monthly, (example a check off sheet).

Thanks to the fact thinking of SC Martinez and Pete Wilson we were able to avoid a really serious accident by the chemical getting into the storm drain. This would have caused possible environmental damage.

Report By

Mare Marie Boone Safety Officet Mayport

Post-IC brand fax transmittal m	nemo <u>7671</u>	Fol pages + \
co. rulif	co. Sal	~e+/

5090 **nu110** Ser N4E2/

6 AUG 1993

Mr. Ernest Frey Northeast District Florida Department of Environmental Protection 7825 Bay Meadows Way, Suite B-200 Jacksonville, FL 32256

Subj: DRY CLEANING FLUID SPILL

Dear Mr. Frey:

On May 4, 1993, while re-locating drums of tetrachloroethylene, a 55-gallon drum was punctured spilling 25-30 gallons of dry cleaning This spill occurred when the forklift operator was attempting to pick up a pallet of drums in the materials handling area beside Building 191A, Fleet and Industrial Supply Center Jacksonville, Fleet Support Center Mayport. The location of the spill is shown on the enclosed map. Our spill response team acted immediately to contain and remove the spill material from the concrete and spill samples were taken for analysis. Copies of the analysis results are enclosed.

Please respond if there is any further action required by Naval Station Mayport. If you have any questions, please contact Mr. Michael Davenport, of my Environmental Staff, at (904) 270-6730.

Sincerely,

LOUGLAS P. TOMLINSON Lieutenant Commander, CEC, U.S. Nav Staff Civil Engineer By direction of the Commanding Officer

## Encl:

(1) Site Map

(2) Analysis Results 93-06-188 and 93-06-189

Copy to:

FDEP Tallahassee (Mr. Eric Nuzie)

PDEP Nextheast District (Mr. Kenton Brown)

FISC Jacksonville

FISC Jacksonville FSC Mayport

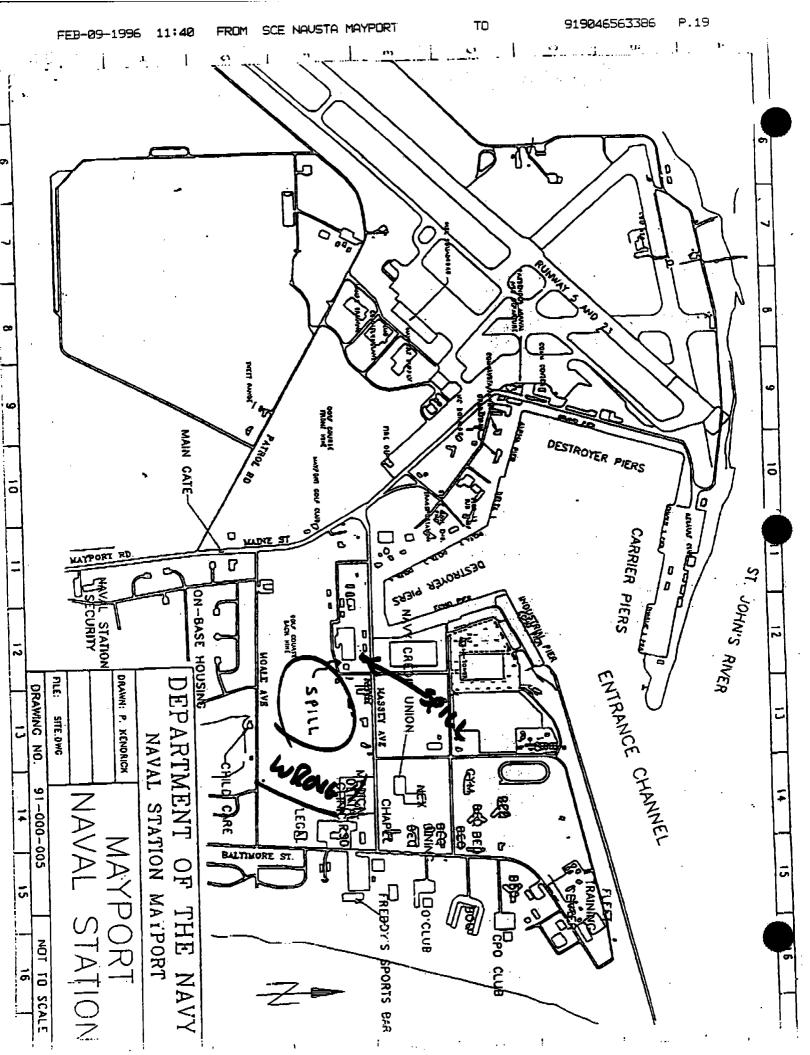
COMNAVAVNACTS Jacksonville (N3)

COMNAVAIRLANT (N442C)

bc: N4E Chron

c:\wpdocs\Spill-TE.FIS/pl/8-11





## FIRST COAST ENVIRONMENTAL LABORA DEL TOR

July 21, 1993

Client	Navy Public Work		Lab F:	9307-106-1
Sample 1.0.:	93-06-185	<u>.</u>	Date Received:	7-15-93
Sample Matrix:	Solid		Date Completed:	7-19-93
. =		•	Date Extraction:	7-16-93

Volatile Organic Compounds loxicity Characteristic Leaching Procedure SV-846 Method 1311 USEPA Method 8240 - 6C/MS (8260)

<u>Parameter</u>	CAS /	Detection Limit(mg/L)	RESULT(==/L)	Max. Cont. Level (mg/L)
=====================================	71-43-2	0.005	< 0.005	0.5
Carbon tetrachloride	56-23-5	0.005	< 0.005	0.5
Snipropenzine	108-90-7	o. 005	< 0.005	100.0
Chloroform	67 <b>-6</b> 6-3	0.005	< 0.005	6.0
1.4-Dichlorobenzene	106-46-7	0.005	< 0.005	<b>7.5</b>
1,2-Dichloroethane	107-06-2	0.005	< 0.005	0.5
i,l-Dichleroethene	75-25-4	0.005	< 0.005	Q. 7
Kethyl ethyl ketone	78-93-3	0.05	< 0.05	250.0
Tetrachloroethene	127-18-4	0.005	0.558	0.7
Trichloroethene	79-01-6	0.005	< 0.005	0.5
Vinyl chipride	75-01-4	0.005	< 0.005	0.2

SW-846 -- "Test Methods for Evaluating Solid Vaste", Third Edition, November, 1986, and Revision I, December, 1987, and 55 FR (61) 11862 - 11875.

## Surrogate Standards Recovery Percentage

•	Recovey Z	Acceptance Limit
Toluene - d.	95.8	86 - 110
4-Bromofluorobenzene	106.9	86 - 115
1.2 Dichiorobenzene - d.	102.4	87 - 112

Respectfully submitted:

Tarry (L) Byrd Jr... Technical Director

EC6/tb --

March Company Exploses in the comment of the commen

 $\{r_k\}^{(n)} = \{r_k\}^n$ 

July 23. 1993

Client:	Navy Public Works	Lab #: 93	<u>307-106-1</u>
	93-06-188	Date Received: 7	-15-93
Sample Matrix:		Date Completes: 7	<u>-22-93</u>
Sample Heti IA.		Date Extraction 7	-21-93

Analytical Report
TCLP - Contaminant List (Partial) Method 1311
Methods EPA 8250 (8270)

Parameter	Requiatory Level	<u>Results</u>	<b>mg/</b> L
Cresols 2.a-Dinitrotaluene Hexachlorobenzene Hexachlorobenzene Hexachlorothane Nitrobenzene Pentachlorophenol 2.4.5-Trichlorophenol 3.4.5-Trichlorophenol	200.0 0.13 0.13 0.5 3.0 7.0 100.0 5.0 400.0 2.0	- DN - DN - DN - DN - DN - DN - DN	

Hote:		<ul> <li>(None detected, lower detectable limit - 0.010 mg/L)</li> <li>(None detected, lower detectable limit - 0.025 mg/L)</li> </ul>
	ND *	There detected, the same the same support
	Ĵ	= (Detected but below quantitive limit, quantition suspect
		= (this compound also detected in the blank)

Respectfully submitted:

Barry C. Byrd, Jr., MS Technical Director

## FIRST COAST ENVISONMENTAL LABORSORS NO.

July 20, 1993

Client: Navy Public Works	93-06-188)	9307-105-1
Sample I.D.: MYP]	Date Roceived:	7- <u>15-93</u>
Sample Matrix: Vater		7-20-93

Metals Analytical Summary
Toxicity Characteristic Leaching Procedure SV-846 Method 1311

<u>Parameter</u>	SV-846 <u>Hethad</u>	CAS_#	Detection <u>Limit(mo/L)</u>	RESULT (mg/L)	Hax. Cont. Level(mg/L)
Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	6010 6010 6010 6010 6010 7470,1 6010	7440-38-2 7440-39-3 7440-43-9 7440-47-3 7439-92-1 7439-97-6 7782-49-2 7440-22-4	0.0394 0.00454 0.00836 0.0140 0.0600 0.0000917 0.0452 0.00414	0.053 0.122 < 0.00836 0.036 < 0.060 0.176 0.076 0.608	5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0

SV-846 -- "Test Methods for Evaluating Solid Waste". Third Edition, November. 1986, and Revision 1. December. 1987, and 55 FR (61) 11862 - 11875.

Respectfully submitted.

Adolph W. Wollitz Laboratory Director FMRS Lab #E82102 FMRS Lab #82110 EPA #FL062 DER Comp QAPP # 8702226

AVV/Eb

3318 Arangta Expressives to the water both 32211 (304-725-4847 http://doi.org/10.1011/2.514847.html

July 21, 1993

LAST FACTOR ST.	<u> </u>
<u>1300 8 1 5 3 93 06 1 50 </u>	Date Received: 7-15-91
Sarple Matrix Solid	Date Completed: 7-20-93
2172 6 3411-14	Date Extraction, 7-19-91

Volatile Organic Compounds

Lowicity - mracteristic Leaching Procedure SV-846 Method 1311

USEPA Method 8240 - GC/MS (8260)

Parame(EF	CAS_#	iletection imit(mq/L)	RESULT(ma/L)	Max. Cont. Level(mg/L)	
Bensan+	72 42-1	1 605	v (2 de5	2.5	
uundan laesabumilahi se Sekarapa <del>ssilah</del> Sekarafassi	55-13- 135-74 57-66	055 1 005 1 005	0 005 2 0 005 0 005	151 1	
1,4-5rchiprobenzene 1,8-3rchiproetnane 1,1-5rchiproetnane	106/46+ 117-06 75/15/4	3. <b>005</b> 1.005 1.045	0 <b>0 005</b> 1 0,00 <b>5</b> 1 005	7	
Mathyl athyl sélmie	*e+43	56	. :3	291 I	
-> isones ordethers 'rogh'ungeshens	127 16 75-31-4	2.00 <b>5</b> 3.003	0 819 v 0.005	: :	
ಳ∘ಕ್ಕಿ% ನಿನ <b>ಿಶ</b> ಕಾ <b>ದಕ</b>	75-91 -	3. <b>005</b>	. 0 005	4.2	****

SV-846 -- "Test Methods for Evaluating Solid Waste". Third Edition, November, 1986, and Revision 1, Decompt., 1987, and 55 FR (61) 11862 - 11875.

## Surrogate Standards Recovery Percentage

	Reces ey Z	Acceptance Limits
Tolwene - C.	16	58 - 110
4-Bromofluorobenzene	10	86 - 115
1,2 Dishlerobenzene - d.	11	87 - 112

Respectfull's submitted:

Technical Director

808/16

## FIRST COAST ENVARIANCE OF THE COAST

THE WE.

aun 33, 1 🖺

Analytical Paport

[CLP | Cuntaminant Fist (Partial) Method [311]

Methods EPA EEGO (E370)

Parameter	Requiatory Level	<u>Results</u>	eć r
Crest a Z.64 into in luers Pexagnization zens maxon pretionate Hexagnipretion Entrolemation Lentarions rens zens zens zens zens zens zens zens z	200.0 0.12 0.15 0.5 3.0 2.0 100.0 5.0 400.0	HD	·
2,4,7,7411 12FF577	2.0		

Note ND = (None detected, lower detectable limit 0.010 mg/l

(None detected, lower detectable limit - 0.025 mg/l

J = (Detected but below quantitive limit, quantition suspect)

B = (this compound also detected in the blank)

•

Respective

SUSTRICEO:

Barr

. J. . KS

Test 13

+617°

518

## HAST COAST ENVIRONGED BY LONG BY COME.

July 20, 1993

Client: Navy Public Vorks (93-06-189)	Lab #: 9307-106-2
Sample 1.0.: MYPT	Date Received: 7-15-93
Sample Matrix: Vater	Date Completed: 7-20-93

Mctals Analytical Summary Toxicity Characteristic Leaching Procedure SV-846 Nethod 1311

Parameter	SW-846 <u>Hethod</u>	CAS #	Detection Limit(mg/L)	RESULT (mg/L)	Max. Cont. <u>Level(EG/L)</u>
Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	6010 6010 6010 6010 6010 7470,1 6010	7440-33-7 7440-37-3 7440-43-9 7440-47-3 7439-52-1 7439-57-6 7782-49-2 7440-22-4	0.0394 0.00454 0.00836 0.0140 0.0600 0.0600 0.000517 0.0452	0 093 0.028 0.028 0.017 0.050 0.09015 0.0452 0.00414	5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0

SW-846 -- "Test Methods for Evaluating Solid Waste", Third Edition, November, 1986, and Revision 1, December, 1987, and 55 FR (61) 11862 - 11875.

Respectfully submitted.

Adolph W. Wolliez Laboratory Director FHRS Lab #E82102 FMRS Lab #87110 EPA #FLO62 DER Comp GAPP # 8702226

C!\WVA

100 1. 1. 14K 1997

12 July 93

From: 320.2 To: 240

Subj: ANALYTICAL TESTING

1. Request the following samples be tested for the parameters indicated.

Sample No.	Media	Test (Clin)	COST	Source
93-06-188	Solid, San'd	TCLP (full no pesticides)	\$ .	мурt
93-06-189	Solid, black top	TCLP (full no pesticides)	<b>\$</b> .	Mypt
93-06-190	Liquid	TCLP (full no pesticides)	\$ ·	Bldg 171
			<del></del>	
	· ·	Total	\$ .00	

- 2. All analysis shall conform to Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, EPA Publication SW-846.
- 3. Job Order number to be used this project is 1243006 and a 24-hour turn around is requested on analytical results.
- 4. Please contact Gail Fallon or Andy Long at 772-4551 if there are any questions.

LACY CONG

RC#00186 To 244 7/13/93 To 1-AB 7/15/93

July 21, 1993

Client: Kavy Publ	ic Vorks	Lab #: 9307-106
_		Date Received: 7-15-93
Sample 1.D.:	See Below (HTP1)	Date Completed: 7-20-93
Sample Matrix:	See Below	DELC CLASSICATION

Metals Analytical Summary

core sub-fi	Sample 1.D. Station	Sample Hatrix	<u>Parameter</u>	<u>Hethod</u>	Results
<u>FCEL Lab #</u> 9307-106-1	93-06-188	So' ÷d	Chramium	6010	7.97 mg/Kg
9307-106-2	93-06-189	Solid	Chromium	6010	5.56 mg/Kg

Respectfully submitted,

Adolph W. Wollitz Laboratory Director FMRS Lab #E82102 FMRS Lab #82110 EPA #FL062

DER Comp QAPP # 8702226

AW/tb

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## PUBLIC WORKS CENTER 94 HAY 48 AH 12: 51 **JACKSONVILLE** ENVIRONMENTAL DEPARTMENT Memorandum

Date: 4 May 1994

From: Hazardous Waste Division Director (Code 320)

Laporatory Division (Code 330) To:

Subj: ANALYTICAL SERVICES REQUEST FOR TF24030, CHEMICAL ANALYSIS

AND CLEAN UP BEHIND BLDG. 191, NAVSTA MAYPORT

(1) Location Sketch Encl:

(2) Plan of Action and Milestones

Request subject services per the following requirements.

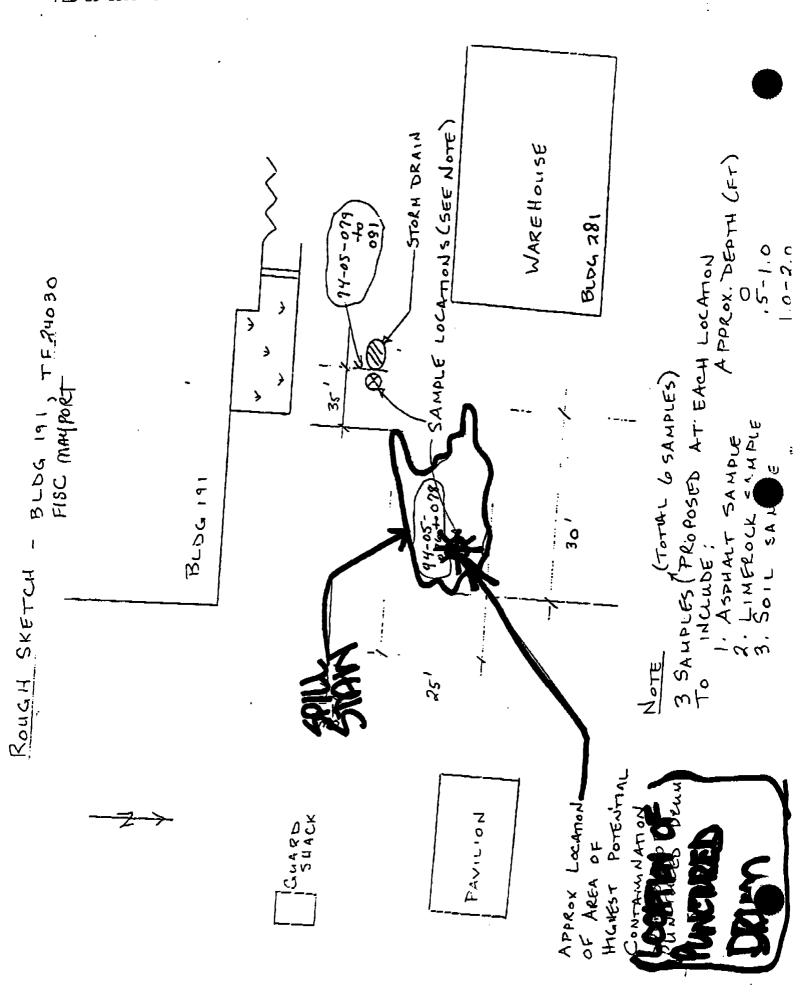
a. Analytes/Method: Method 8240 (CLIN 0001HL)

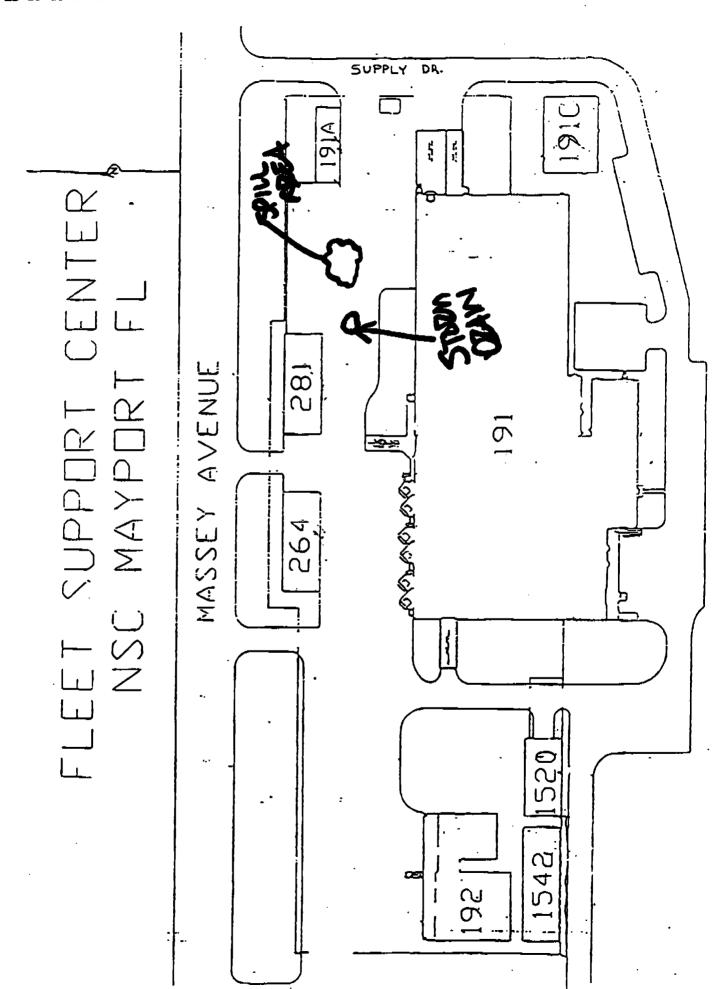
Sampling: Collect 6 samples as noted on enclosure (1). Recommend pick and hand auger be used to collect samples. Requested analysis should be conducted on each of the six samples. Code 330 should leave sampling locations as level as possible after work; code 320 will followup to have paving patched pending test results (if results show tetrachloroethylene above detectable limits, remediation work will require removing additional paving anyway.)

- c. Turn Around Time: Project has been charted on enclosure (2) for Mayport Zone Manager. Request sampling be performed by 20 May 94 with test results back by 8 Jun 94.
  - d. Point of Contact: G. Fallon at ext. 8320.
  - Job Order Number: 1243006
- 2. A more accurate sketch, suitable for submission to FDEP, is also requested with the final results. The sketch must include, as a minimum, the location of the spill, where the forklift punctured the drum, the storm drain, and where the samples were taken. The main concern with the sketch's accuracy is the location of samples.

Prej # 94-161 Sample# 94-05-676 to 94-05-081

'n





# PLAN OF ACTION AND MILESTONES FOR FISC BLDG, 191 SPILL (TF24030)

ACTION	ORIGINAL / REVISED DATE STATUS
<ol> <li>Code 320 identify analytical methods and submit request for sampling and analysis to Code 330.</li> </ol>	29 Apr 94
2. Code 330 perform sampling and deliver sample to laboratory. Also provide sketch of sample locations.	20 May 94
3. Code 330 receive analytical results back from laboratory.	8 Jun 94
4. Code 320 review analysis and provide recommendation on additional remediation.	10 Jul 94
**Following items contingent on disco	tems contingent on discovering low level contamination**
<ol> <li>Code 320 develop statement of work for site remediation; include additional analysis, excavation, and written report.</li> </ol>	24 Jun 94
6. Code 240 award contract for site remediation.	24 Jul 94
7. Contractor complete work.	5 Aug 94
8. Code 320 dispose of contaminated soil through DRMO.	23 Sep 94

7

## NAVY PUBLIC WORKS CENTER JACKSONVILLE ENVIRONMENTAL DEPARTMENT MEMORANDUM

Date: 24 Jun 94

From: Acting HW Division Director To: FISC (Attn: Marie Boone)

Subj: TF-24030, CHEMICAL ANALYSIS AND CLEAN UP BEHIND BLDG. 191,

SPILL AREA

Encl: (1) Analytical Results

(2) Sketch of Sample Area

1. Per enclosure (1), the tetrachloroethylene sample results from enclosure (2) sample locations indicate no contamination. Constituents found such as xylene is normal for a parking area and associated motor vehicle undercarriage leakage.

MELCHIORRI

Copy to: Codes 300S

23 JUN 94

€.

## MEMORANDUM

From: 330.2 To: 320

Subj: ANALYTICAL TEST RESULTS

Ref: (a) Code 320 Request for Analytical Service of 4 MAY 94

Encl: (1) Lab Results, Call # 0113, Project # 94-161

(2) Chain of Custody

1. Per reference request, samples were collected by our staff from MYPT area behind BLDG 191 and forwarded to the lab for testing. The results and the chain of custody are provided in enclosures (1) and (2).

,一点一个人,我们还<mark>没有</mark>到。——"这样的

2. If there are any questions, please call me at 772-4543, ext 8306.

June 22, 1994

### Amended

Client:	Navy Public Nor	ks	Lab #: 9405-236-1
Sample 1.D.:	94 - 05 - 076	Asphalt	Date Received: 5-27-94
Sample Matrix:	Solid	<del></del>	Date Completed: 5-28-94
		•	Sample Collection: 5-27-93

Volatile Organic Compounds EPA Method 8040 List (GC/MS)

<u>Parameter</u>		<u>RESULTS</u>
Benzene	÷ •	No
8rmtoriichloromethane		ND
Sconoform		140
8 consent hance		NO
Carbon tetrachloride		ND
Chlorobenzene		ND
Chloroethene		ND ND
2-Chiorosthylvinyl ether		ND
Chloroform		)4D
Dibromochtoromethane		ND
Dichloredifluoromethane	•	NO
1,1-Dichloroethene		MZD
1,2-Dichloroethane		NO
1,1-Dichloroethene		ND
Trans-1,2-Dichlorochtane		NO
1.2-Dichloropropane	:	ND
Cis-1,2-Dichloropropene		ND
Trans-1,3-Dichloropropene		nό
Ethylpenzene	•	155
Methylene chloride		ND
1,1,2,2-Tetr ichloroethane	•	NO
Tetrachloroethene		ND
Toluene	•	586
1,1,1-Trichloroethane	<del>;</del>	MED.
1,1,2-Trichloroethane		MD
Trichloroethene		ND
Trichlorofluoromethene	;	ND =
Vinyl chloride	<b>:</b>	MD =
1,2 Dichtorobenzene		NO
1,3 Dichlorobenzene	•	KD '
1,4 Dichlorobenzene	Ε	ND

Merry C Byrd, Jr., Technical Director

DEP Comp BAPP # 870ZZZG

June 22, 1994

Client:	Navy Public Works	Lab #: 9405-236-1
Sample I.D.:	94.05.076 Ashalt	Date Received: 5-27-94
Sample Matrix:	Solid	Date Completed: 5:28:94
		Sample Collection: 5-27-93

Other Determined Volatile Organic Compounds USEPA METHOD 624/524.2/8260 - GC/HS

The compounds reported below are compounds determined to be present in the sample which are reported on lists other than the requested parameter list.

Parameter Conc. Units Det. Limit Result

Total Xylenes ug/Kg S 477

Tentatively Identified Compounds

The compounds in this section are compounds which generated significant peaks in the chromatographic analysis and were tentatively identified utilizing the KBS Library in the Mass Spectal Data System. Since standard instrument responses have not been determined for these compounds a Response Factor of 1.00 has been utilized to calculate the result. Therefore, the result should be viewed in a conservative manner.

<u>Parameter</u>

Estimated Result

15-15

Barry C. Efrd, Jr., MS Technical Director DEP Comp GAPP # 870222G

ΤĎ

## FIRST COAST ENVIRONMENTAL LABORATORY, INC.

June 22. 1994

Client:	Navy Public Ho	rks	Lab #:	9405-236-2
Sample I.C.:		Limerock	Date Received:	5 - 27 - 94
Sample Matrix:	<u> Sol1d</u>		Date Completed:	5-28-94
			Sample Collection:	5-27-93

Volatile Organic Compounds EPA Hethod BO40 List (GC/HS)

<u>Parameter</u>	<u>results</u>
Benzeno	ND
Bromodich Loromethane	MD
Branofera	ND
Sremonethane	ND
Carbon tetrachloride	ND
Chlorobenzene	ND
Chloroethane	MD
2-Chloroethylvinyl ether	NO
Chloroform	NO
Dibromochloromethane	ND .
Dichlorodifluoromethene	ND
1,1-Dichloroethane	ND :
1.2-Dichloroethane	ND
1,1-Dichloroethene	MO ;
Trans-1,2-Dichlorochtane	HD.
1,2-bichloropropane	MD
Cis-1,2-Dichloropropene	ND
Trans-1,3-Dichloropropene	ио 44.5
Ethylbenzene	<del></del>
nethylene chloride	ON ON
1,1,2,2-Tecrachloroethane	260
Tetrachloroethene	18.2
Toluene	MO
1,1,1-Trichloroethana	ND
1,1,2-Trichioroethane	MD WD
Trichloroethene	MO *
Trichlorofluoromethane	NO 7
vinyt chloride	MD
1,2 Dichlorobenzenc	ND
1,3 Dichlerebenzene	NO
1,4 Dichlorobenzene	100
Note: NO - (None detected, lower detectal	ble limit •5 ug/Kg) ble limit •50 ug/Kg)

B = (this compound also decerted in the plant

Barry C. Syrd, Ar., MS Technical Director DEP Comp CAPP # 8702226

FEB-09-1996 11:36  $= (1-\chi(k)g(k)+k-1) - 2kk^2 + k(k)k^2$ 1-4-1-6-110

## FIRST COAST ENVIRONMENTAL LABORATORY, INC.

June 22. 1994

Client:	Navy Public Wor	rks 9	, <u>Lab #:</u>	9405-236-2
Sample 1.D.;	94-05-077	himerock !	Date Received:	5-27-94
Sample Matrix:	Solid		Date Completed:	5 - 28 - 94
	·		Sample Collection:	5- <u>27-93</u>

Other Determined Volatile Organic Compounds USEPA METHOD 624/524.2/8260 - GC/MS

The compounds reported below are compounds determined to be present in the sample which are reported on lists other than the requested parameter list.

Result Conc. Units Det. Limit <u>Parameter</u> 203 5 ug/Kg Total Xylenes

## Tentatively Identified Compounds

The compounds in this section are compounds which generated significant peaks in the chromatographic analysis and were tentatively identified utilizing the MBS Library in the MBS Spectal Data System. Since standard instrument responses have not been determined for these compounds a Response fector of 1.00 has been utilized to calculate the result. Therefore, the result should be viewed in a conservative manner.

<u>Parameter</u>

Estimated Result

Technical Director DEP COMP GAPP # 870222G

June 22, 1994

 Client:
 Navy Public Works
 Lab F: 9405:236:3

 Sample I.D.:
 94-05:078
 Oate Received: 5-27:94

 Sample Hatrix:
 Solid
 Date Completed: 5-28:94

 Sample Collection:
 5-27:93

Volatile Organic Compounds EPA Hethod 8040 List (GC/HS)

	•
<u>Parameter</u>	RESULTS
Benzene	ND
Bromodichloromethano	CM CM
Branoform	No.
Brownethane	CTIN.
Carbon tetrachloride	SIQ.
Chlorobenzene	ЖD
Chloroethane	NO
2-Chloroethy: vinyl ether	ND
Chloroform ·	ND
Dibramachloramethana	70
Dishlorodif'.uoromethane	NO
1,1-Dichlorosthane	MO
1,2-Dichtoroethane	ND
1,1-Dichloroethene	no
Trans-1,2-Dichloroehtone	NO
1,2-Dichtoropropane	ND
Cis-1,2-Dich!oropropene	DX
Trans-1,3-Dichloropropene	<b>ND</b>
Ethylbenzene	NO
Hethylene chloride	ND
1,1,2,2-Tetrachloroethane	OK
Tezrachloroethene	NO
Toluene	ND
1.1.1-Trichloroothane	MD
1,1,2-Trichloroethano	HO
Trichloroethene	NO
Trichlorofluoremethane	ND -
Viny( chloride	ND *
1.2 Dichlorobenzene	KD
1.3 Dichlorobenzeno	NO
1,4 Dichlorobenzene	KD
	£

Note: ND = (None detected, lower detectable limit - 5 ug/Kg)
ND = (None detected, lower detectable limit - 50 ug/Kg)
Ug/K

Barry C. Byrd, Jr. MS Technical Director DEP Comp GAPP # 8702226

BCS/tb

(904) 725-4847 · Fax (904) 725-2215

## FIRST COAST ENVIRONMENTAL LABORATORY, INC.

June 22, 1994

Client:	Navy Public Hor	-ks	Lab #:	9405-236-4
Sample I.D.:	94 - 05 - 079	1 Acphalt	Date Received:	
Sample Hatrix:	Solid		Date Completed:	5-28-94
			Sample Collection:	S-27-93

Volatile Organic Compounds EPA Hethod 8040 List (GC/HS)

<u>Parameter</u>	RESULTS
Benzene	ND
Bromodichloromethane	RD
Brompform	ИD
Bramomethane	ND
Carbon tetrachloride	NĎ
Chlorobenzene	NO
Chioroethane	<b>CK</b>
2-Chlorosthyivinyl ether	СИ
Chloroform	ON
Dibrosoch Loromethane	מא
Dichlorodifluoromethane	NO
1,1-Dichlorocthane	NO
1,2-Dichloroethanc	ND
1,1-Dichloroetheno	7.42
Trans-1,2-Dichloroehtane	סא
1,2-Dichloropropane	ЖО
Cis-1,2-Dichloropropene	ND
Trans-1,3-Dichloropropene	<b>ND</b>
Ethylbenzene	NO
Methylene chloride	ND
1,1,2,2-Tetrachloroethane	NO
Tetrachloroethene	NO
Toluene	9.27
1,1,1-Trichloroethane	ND
1,1,2-Trichloroethane	ND
Trichloroethene	ND
Trichlorofluoromethane	ND +
Vinyl chloride	ND *
1,2 Dichlorobenzene	ND
1,3 Dichlorobenzene	ND
1,4 Dichtorobenzene	ND

(None detected, lower detectable limit - 5 ug/Kg)
(None detected, lower detectable limit - 50 ug/Kg)
(Detected but below quantitive limit, quantition suspect)
(this compound also detected in the blank) Note: ND +

Respectfully submitted

COByrd . Jr., M Technical Director

DEP COMP QAPP # 8702225

June 22, 1994

Navy Public Horks Lab #: 9405-236-5 Sample J.D.: 94-05-080 Date Received: 5-27-94 Sample\_Hatrix: Solid Oate Completed: 5.28.94 Sample Collection: 5-27-93

Volatile Organic Compounds : EPA Nathod 8040 List (GC/MS)

Parameter	RESULTS
8 enzene	NO
Bromodichloromethane	WO
Broce ferm	ND
\$ romane thane	NO
Carbon tetrachloride	ON
Chil or <del>obenzene</del>	ND .
Chloroethene	AD
2-Chloroethylvinyl ether	MO
Chloroform	MD
Dibrosochloromethane	NO
Oichlorodifluoremethane	NO
1,1-Dichlornethane	OM
1,2-Dichloroethane	RD.
1,1-Dichloroetnene	ND
Trans-1,2-Dichlorochtane	NO
1,2-Dichloroprepane	NO
Cis-1,2-Dichloropropene	MD
Trans-1,3-Dichtoropropene	ND
Ethythenzene	ND
Methylene chloride	OM
1,1,2,2-Tetrachloroethene	MD.
Tetrachioroethene Toluene	ND
	6.77
1,1,1-Trichloroethane 1,1,2-Trichloroethane	MD
Trichioroethene	Ю
Trichlorofluoromethame	MO
Vinyl chloride	MD =
1,2 Dichlorobenzene	ND T
1,3 Dichtorobenzene	NO
1,4 Dichlorobenzene	ND
i,- siental decircula	NO.
· · · · · · · · · · · · · · · · · · ·	

(None detected, lower detectable limit -  $\frac{5}{50}$  ug/Kg) (None detected, lower detectable limit -  $\frac{50}{50}$  ug/Kg) (Detected but below quantitive limit, quantition suspect) (this compound also detected in the blank) ND .

Barry E. Byrd, Jr., Technical Director DEP Comp DAPP # 870222G

## FEB-09-1996 11:37

## FIRST COAST ENVIRONMENTAL LABORATORY, INC.

June 22, 1994

Client:	Navy Public Works	Lab #: 9405-236-6
Sample I_O_:	94-05-08/1/ 50:0	Date Received: 5-27-94
Sample Matrix:	<u> </u>	Date Completed: 5-28-94
		Sample Collection: 5-27-93

Volatile Organic Compounds EPA Hethod 8040 List (GC/MS)

<u>Parameter</u>		RESULTS
Benzene		ND
8ronodichloremethane		MD
Bramaform		ND
Bromonethane	•	NO
Carbon tetrachloride	:	ND
Chlorobenzene		MD
Chlorcethane	:	ND
2-Chloroethylvinyl ether	•	ND
Chlaroform`		ЖĎ
Dibromochloromethane		MO
Dichlorodifluoromethane		NO
1,1-Dichloroethane		NO
1.2-Dichtoroethane		C)
1,1-Dichloroethenc		NO
Yrans-1,2-Dichlorochtone		ND
1,2-Dichloropropane		NĎ
Cis-1,2-Dichloropropene		פע
Trans-1,3-Dichtoropropene	!	ND
Ethylbenzenc	•	NO
Hethylene chloride		NÇ
1,1,2,2-Tetrachlorocthane		NO
Tetrachloroethene	•	NO
Telucne	:	ЖD
1,1,1-Irichlorocthane		ND
1,1,2-Trichloroethane		KD
Trichloroethene		DM
Yrichlorofluoromethanc		ND ·
Vinyl chloride	:	NO -
1,2 Dichlorobenzene	÷	ND
1,3 Dichtorobenzene	Ī	NO
1,4 Dichtorobenzene	i	ND
•		_

(Mone detected, lower detectable limit - 5 ug/kg)
(None detected, lower detectable limit - 50 ug/kg)
(Detected but below quantitive limit, quantition suspect)
(this compound also detected in the blank) Note: ND #

Technical Director

DEP Comp GAPP # 8702226

BCE/tb

BBIB ARLINGTON EXPRESSWAY

FAX 1904) 725-2215 1904) 725-4847

JACKSONVILLE, FLORIDA 32211

MIN OF CUSTODY RECORD

NAVY PUBLIC WORKS CENTER JACKSONVILLE

८/२५

ATTH: CODE 310 (ENVIRONMENTAL LABORATORY)

JACKSONVILLE, FL 32212-0030

ATIN:

Project Description; MAYPORT SPILL AREA AND STORM DRAIN AREA

904) 725-5708

Onte (Millery) REMARKS 9240 B240 8240 8240 8240 8240 Date Military Received by (Signature): NO. OF SAMPLE CONTAINERS Date (Military) Relinquished by 1Signstene): SAMPLE DESCRIPTION 94-05-079 - SOLID - SOL10 - SOLID - SOLID 94-05-070 - SULLD 94-05-00x - SOLTD 94-05-080 14-05-076 94-05-077 Dote | Millery | Redefed by (Signeture): TIME (MIII(ory) CALL #103 1.22 B.23 DATE Reliquished by 1Signeture): HTYT-STORM DRAIN KPT-STORN DRAIN TYPT-STORN DRAIN Sampler (Signature) MPT-SPILL AREA TPT-SPILL AREA NTT-SPILL AREA PROJECT #94-161 STATION

34

Date Milliory REMARIKS

Date Millary | Received by ISigneture):

Reliquished by ISigneturel:

ì



## DEPARTMENT OF THE NAVY

NAVAL STATION

MAYPORT, FLORIDA 32228 Buiens of Waste Clondibacter refer to

5090.10 Ser NAEZ C

AUG 12 1994

1 O AUG 1995

Jochnical Review Section Mr. Ernest Frey Northeast District Florida Department of Environmental Protection 7825 Bay Meadows Way, Suite B-200 Jacksonville, FL 32256

> DRY CLEANING FLUID SPILE " Subi: MAY 4, 1993, AT BUILDING 193

Dear Mr. Frey:

On May 4, 1993, a spill of tetrachloroethylene occurred and immediately cleaned up. The spill occurred while relocating drummediately cleaned up. Building 191, Fleet Industrial Supply Center, Fleet Support Cent Please reference Naval Station Mayport letter 5090, See N4E2/00110 of August 26, 1993, which provided initial report of the contract o and analysis.

As requested by your office, additional chemical england performed on the asphalt, limerock, and soil. The results enclosed and show the area is clean of contamination and required further action.

Naval Station Mayport requests written concurrence from your wait that the area requires no further clean up. If you have questions, please contact Mr. Michael Davenport, NAR, at 504-2 6730.

Sincerely,

DOTIGIAS P. TOMUINSON Lightenant Commandar, .... Staff Civil Engineer By direction of the Commanding C

Encl:

The state of the s

(1) Site map

(2) Analysis Results 94-05-076, 077, 078, 079, 080, 081 and Chain of Character

Copy to:

FDEP Tallahaesee (Mr. Eric Ruzie FDEP Northeast District (Mr. Kennen 1980) FISC Jacksonville FISC Jacksonville FSC Mayport COMNAVBASE Jacksonville (N3)

5090.10 Ser N4E/00166 1 0 AUG 1994

Mr. Ernest Frey
Northeast District
Florida Department of Environmental Protection
7825 Bay Meadows Way, Suite B-200
Jacksonville, FL 32256

Subj: DRY CLEANING FLUID SPILL OF MAY 4, 1993, AT BUILDING 191

Dear Mr. Frey:

On May 4, 1993, a spill of tetrachloroethylene occurred and was immediately cleaned up. The spill occurred while relocating drums at Building 191, Fleet Industrial Supply Center, Fleet Support Center Mayport. Please reference Naval Station Mayport letter 5090, Ser N4EZ/00110 of August 26, 1993, which provided initial report of spill and analysis.

As requested by your office, additional chemical analysis was performed on the asphalt, limerock, and soil. The results are enclosed and show the area is clean of contamination and requires no further action.

Naval Station Mayport requests written concurrence from your office that the area requires no further clean up. If you have any questions, please contact Mr. Michael Davenport, N4E, at 904-2706730.

Sincerely,

DOUGLAS P. TOMLINSON
Lieutenant Commander, CEC, U.S. Navy
Staff Civil Engineer
By direction of
the Commanding Officer

## Encl:

(1) Site map

(2) Analysis Results 94-05-076, 077, 078, 079, 080, 081 and Chain of Custody

## Copy to:

FDEP Tallahassee (Mr. Eric Nuzie)

FDEP Northeast District (Mr. Kenton Brown)

FISC Jacksonville

FISC Jacksonville FSC Mayport COMNAVBASE Jacksonville (N3)

bc: N4E Chron, N4E4 c:\-OHS-SPC\Spill-T2.DEP/pl/8-8

ATTACHMENT D
BORING LOGS

TITLE: U.S. Naval Sta	ation, Mayport	, F L	LOG of	WELL: MPT-TC-MWO	15		IG NO. MW-1	
LIENT: SOUTHNAVE	ACENGCOM					PROJE	CT NO: 8534+05	<u>-</u>
CONTRACTOR: Huss C	rilling			DATE STARTED: 5/	19/94		COMPLTD: 5/19/9	94
METHOD: Hollow Stem	Auger	CASE SIZE: 4 in.		SCREEN INT.: 3.0	to 13.0	PROTE	CTION LEVEL: D	
TOC ELEV.: 9.56 FT.		MONITOR INST.: N/A	<u> </u>	TOT DPTH: 13FT.		DPTH	TO \$ 6 FT.	
LOGGED BY: Paul Lo	cascio (ESE)	WELL DEVELOPMENT	DATE: 5/1	9/94		SITE:	Blag. 191	
E LABORATORY SAMPLE ID.	RECOVERY HEADSPACE (ppm)		COMMENTS	ION	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5		Total Depth of Boring =  Note: Logs obtained fro Engineering, 1994, Conta	13' bis	issessment Report		SM	Post-Hole Observation	
20-			GE 1 of T				TAL SERVICES	

ITLE; U.S. Naval Station, Mayport, FL	LOG of	WELL: MPT-TC-MW01I	BORIN	G NO. MW-10			
LIENT: SOUTHNAVFACENGCOM			PROJE	CT NO: 8534-05			
ONTRACTOR: Huss Drilling		DATE STARTED: 5/19/94		COMPLTD: 5/19/94			
ETHOD: Mud Rotary	CASE SIZE: 4 in.	SCREEN INT.: 35' to 40'	PROTECTION LEVEL: D				
OC ELEV.: 9.6 FT.	MONITOR INST.: N/A	TOT DPTH: 40FT.	DPTH T	O 7 6 FT.			
OGGED BY: Paul Locascio (ESE)	WELL DEVELOPMENT DATE: 5/1	9/94	SITE: E	31dg. 191			
RECOVERY  HEADSPACE  (ppm)	SOIL/ROCK DESCRIPT AND COMMENTS	NOI LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA		
SI	TY SAND: fine grained		SM	Post-Hole			
5—				Observation			
15			SP				
	AND: fine to very fine, gray, mois agments	t, w/ shell		16,20,20,22			
25— s	AND: as above			18,20,20.24			
30_	·			12,14,16,12			

ITLE: U.S. Naval Station, Mayport, F		LOG of	WELL: MPT-TC-MWO	1]		16 NO. MW-15		
LIENT: SOUTHNAVFACENGCOM			<u> </u>		PROJE	CT NO: 8534-05		
ONTRACTOR: Huss Drilling			DATE STARTED: 5/		COMPLTD: 5/19/94			
IETHOD: Mud Rotary	CASE SIZE: 4 in.		SCREEN INT.: 35	to 40'		CTION LEVEL: D		
OC ELEV.: 9.6 FT.	MONITOR INST.: N/A		TOT DPTH: 40FT.			ro 7 6 FT.		
OGGED BY: Paul Locascio (ESE)	WELL DEVELOPMENT DATE: 5/19/94				SITE:	Bidg. 191		
RECOVERY HEADSPACE	SOIL/ROCK DESCRIPTION AND COMMENTS  Continued from PAGE 1			LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6+1N	WELL DATA	
35—	SAND: as above, w/ abun SAND: as above, w/ trac Total Depth of Boring =	dant shell e shell fra	fragments		SP	12,22,24,30 18,22,24,28		
	Note: Logs obtained fror Engineering, 1994, Conta for Building 191, U.S. Nav	mination A	ssessment Report					
50—						·		
55—								
60—	PAG	-				 		

ITLE: U.S. Naval Station, Mayp	208 01	WELL: MPT-TC-MW03S	BORING NO. MW-3	<u> </u>	
LIENT: SOUTHNAVFACENGCOM			PROJECT NO: 8534-05	0.4	
ONTRACTOR: Huss Drilling		DATE STARTED: 5/19/94	COMPLTD: 5/19/	<del>94</del>	
ETHOD: Hollow Stem Auger	CASE SIZE: 4 in.	SCREEN INT.: 3.0' to 13.0'	PROTECTION LEVEL: D		
OC ELEV.: 8.68 FT.	MONITOR INST.: N/A	TOT DPTH: 13FT.	DPTH TO \$ 6 FT.  SITE: Blag. 191	<del></del> -	
OGGED BY: Paul Locascio (ES	E) WELL DEVELOPMENT DATE: 5/1	WELL DEVELOPMENT DATE: 5/19/94			
A COVERY  HEADSPACE	SOIL/ROCK DESCRIPT	NOI LITHOLOGÍC SYMBOL	SOIL CLASS	WELL DATA	
5	SILTY SAND: fine grained		Post-Hole Observation		
15—	Total Depth of Boring = 13' bls  Note: Logs obtained from Environm Engineering, 1994, Contamination A for Building 191, U.S. Naval Station	ssessment Report			

TITLE: U.S. Naval Statio	on, Maypor	t, FL	LOG of	WELL: MPT-TC-MWO	45	BORI	NG NO. MW-4	
CLIENT: SOUTHNAVFAC	ENGCOM					PROJ	ECT NO: 8534-05	
CONTRACTOR: Huss Drill	ling			DATE STARTED: 5/	20/94		COMPLTD: 5/20/	94
METHOD: Hollow Stem A	uger	CASE SIZE: 4 in.		SCREEN INT.: 3.0	to 13.0"	PROTE	CTION LEVEL: D	
TOC ELEV.: 8.68 FT.		MONITOR INST.: N/A	Α	TOT DPTH: 13FT.		DPTH	TO V N/A FT.	
LOGGED BY: Paul Loca:	scio (ESE)	WELL DEVELOPMENT	T DATE: 5/2	20/94		SITE:	Blag. 191	
L LABORATORY SAMPLE ID.	RECOVERY HEADSPACE (ppm)	SOIL/ROCH AND (	K DESCRIPT COMMENTS	ION	L11HOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5		SILTY SAND: fine grained  Total Depth of Boring =  Note: Logs obtained from Engineering, 1994, Contator Building 191, U.S. National States (1994). Nat	13' bis	ssessment Report		SM	Post-Hole Observation	
20—		PAGI	<u> </u>	C-04S ABB 1	 <u>EN</u> VIRO	 <u> </u>   <u> </u>	   TAL SERVICES	INC.

			WELL: MPT-TC-I		BORING NO.			
LIENT: SOUTHERN L	DIVISION, NAV	FACENGCOM		T		PROJ	ECT NO: 8534-05	<u></u> .
ONTRACTOR: GROUN	IDWATER PROT	ECTION, INC.			: 05/31/95	COMPLTD: 05/31/95		
ETHOD: 4.25" H.S.A.		CASE SIZE: 2"			PROTE	CTION LEVEL: D		
OC ELEV.: 8.73 FT.		MONITOR INST.: F.I.I	D	TOT DPTH: 12.5	FT.	DPTH	TO ¥ 3.0 FT.	
OGGED BY: S. SCA	VONE	WELL DEVELOPMENT	DATE: 06	3/02/95	LITHOLOGIC SYMBOL	SITE:	Bidg. 191	
LABORATORY SAMPLE ID.	RECOVERY HEADSPACE (ppm)		SOIL/ROCK DESCRIPTION AND COMMENTS			SOIL CLASS	BLOWS/6-IN	WELL DATA
		ASPHALT (5")			79.79	5M		
5—		SAND- fine with shell frag	gments, lig	ght tan.		SP		
15		TOTAL DEPTH OF BORIN	1G = 12.5°	BLS				

TITLE: U.S. Naval Station,	, Mayport, Fl	<u>-</u>	LOG of	WELL: MPT-TC-	MW065	BORI	NG NO.			
CLIENT: SOUTHERN DIVIS	SION, NAVFA	CENGCOM					PROJECT NO: 8534-05			
CONTRACTOR: GROUNDWA	TER PROTEC	TION, INC.		DATE STARTED	: 05/31/95		COMPLTD: 05/31	/95		
METHOD: 4.25" H.S.A.		CASE SIZE: 2"		SCREEN INT.:	2.5-12.5	PROTECTION LEVEL: D				
TOC ELEV.: 9.84 FT.		MONITOR INST.: F.I.	D.	TOT DPTH: 12.5	FT.	DPTH	<b>TO ♀</b> 3.0 FT.			
LOGGED BY: S. SCAVONE	<del></del>	WELL DEVELOPMENT	DATE: 06	/02/95		SITE:	Bidg. 191			
E LABORATORY SAMPLE ID.			COMMENTS	TION	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL GATA		
	AS	SPHALT (5")			1,1	SM				
5		ILTY SAND- fine to ver				SP				
		AND- as above.  AND- fine with shell fra	igments, gi	ray.						
10										
	-	OTAL DEPTH OF BORIN	IG = 12.5° E	BLS		_		<u></u>		
15—										
				·						
20—		· DAGE	1 of T <u>C</u>	MWN89 AF	RB ENVIR	) NMFN	TAL SERVICES	S, INC.		

DATE STARTED: 05/04/95 COMPLTD: 05/04/95 ETHOD: 4.25" H.S.A. CASE SIZE: 2" SCREEN INT 5-15' PROTECTION LEVEL: D OC ELEV.: 13.49 FT. MONITOR INST.: F.I.D. TOT DPTH: 15.5FT. DPTH TO \$ 5.5 FT.  DEGED BY: S. SCAVONE MELL DEVELOPMENT DATE: 05/17/95 SITE: SMMU 20  LABORATORY SAMPLE ID: SWY	ITLE: U.S. Naval Station, M			LOG of	WELL: MPT-20-MW	015		ING NO. JECT NO: 8534-05	
ETHOD: 4.25" H.S.A.  CASE SIZE: 2"  SCREEN INT.; 5-15'  PROTECTION LEVEL: D  OC ELEV: 13.49 FT.  MONITOR INST.: F.I.D.  TOT DPTH: 15.5FT.  DPTH TO \$ 5.5 FT.  OGGED BY: S. SCAVONE  WELL DEVELOPMENT DATE: 05/17/95  SITE: SWMU 20  ELABORATORY SAMPLE ID  OC ELABORATORY SITE: SWMU 20  CONCRETE (8")  SILTY CLAY-fill material, tan to brown, slight odds.  CONCRETE DEBRIS  CONCRETE DEBRIS  CONCRETE DEBRIS  SAND- as above.  CLAYEY SAND- gray to dark gray.  CLAYEY SAND- gray to dark gray.  OD SCAND- SC.  Observation					DATE STARTED: O	5/04/05	PROC		/95
ORCELEV. 13.49 FT. MONITOR INST.: F.I.D. TOT DPTH: 15.5FT. DPTH TO \$ 5.5 FT.  OGGED BY: S. SCAVONE MELL DEVELOPMENT DATE: 05/17/95 SITE: SMMU 20  SOIL/ROCK DESCRIPTION AND COMMENTS  SOIL/ROCK DESCRIPTION AND CO		ER PROTE	<del></del>		·		BBOT		
OGGED BY: S. SCAVONE  MELL DEVELOPMENT DATE: 05/17/85  SITE: SMMU 20  SOL/ROCK DESCRIPTION AND COMMENTS  SOL SAMPLE 10.  DO SOL SAMPLE 10.  CONCRETE (8")  SILTY CLAY-fill material, tan to brown, slight odor.  CONCRETE DEBRIS  SAND- as above.  CLAYEY SAND- gray to dark gray.  CLAYEY SAND- gray to dark gray.  Observation								· <del>-</del>	
LABORATORY SAMPLE TO.  20S0010 X 100x 0.0 CONCRETE (6") SILTY CLAY-fill material, tan to brown, slight odor.  CONCRETE DEBRIS SAND- fine with shell fragments, light tan to gray.  CLAYEY SAND- gray to dark gray.  CLAYEY SAND- gray to dark gray.  CLAYEY SAND- gray to dark gray.		<del></del>			·	·			<del>.</del>
20800105 X 100% 0.0 CONCRETE (6") SILTY CLAY-fill material, tan to brown, slight odor.  CONCRETE DEBRIS T SP Hand Auger  SAND- fine with shell fragments, light tan to gray.  CLAYEY SAND- gray to dark gray.  CLAYEY SAND- gray to dark gray.  Observation	OGGED BY: S. SCAVONE		WELL DEVELOPMENT	DATE: 05	<del></del>			. 3440 20	
20800105 X 100X 0.0 CONCRETE (6°) SILTY CLAY-fill material, tan to brown, slight odor.  CONCRETE DEBRIS  SAND- fine with shell fragments, light tan to gray.  SAND- as above.  CLAYEY SAND- gray to dark gray.  Observation	LABORATORY NO.	HEADSPACE (ppm)			TION	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
CONCRETE DEBRIS  20800105 X 100X 0.0 SAND- fine with shell fragments, light tan to gray.  SP Hand Auger  SAND- as above.  CLAYEY SAND- gray to dark gray.  Observation	20S00101 X 100%	•   0.0				200	SC	Hand Auger	
CLAYEY SAND- gray to dark gray.  CLAYEY SAND- gray to dark gray.  Observation	1 1 7 1		CONCRETE DEBRIS				SP	Hand Auger	
				dark gray			SC	Observation	
	15—		TOTAL DEPTH OF BORIN	IG = 15.5' {	BLS				

'ITLE; U.S. Naval Station, Mayport, F		LOG of	WELL: MPT-20-M	W025	BORI	NG NO.	
CLIENT: SOUTHERN DIVISION, NAVEA	CENGCOM				PROJ	ECT NO: 8534-05	
CONTRACTOR: GROUNDWATER PROTEC	TION, INC.		DATE STARTED:	05/05/95		COMPLTD: 05/05/	95
1ETHOD: 4.25" H.S.A.	CASE SIZE: 2"		SCREEN INT.: 4	-14'	PROTE	ECTION LEVEL: D	
FOC ELEV.: 13.68 FT.	MONITOR INST.: F.I.D.		TOT DPTH: 14.2F	τ.	DPTH	<b>TO ♀ 5.</b> 5 FT.	
OGGED BY: S. SCAVONE	WELL DEVELOPMENT D	ATE: 05	/17/95		SITE:	SWMU 20	
COVERY  RECOVERY  RECOVERY  RECOVERY	SOIL/ROCK D AND COM		ION	LITHOLOGIC	SOIL CLASS	BLOWS/6-IN	WELL DATA
20S002Q1 X 100% 0.0 0	RGANIC RICH SOIL				OH SP	Hand Auger	
	AND- fine, with shell fragm AND- as above.	nens. gr	ay.			Hand Auger	
10	AND- as above.						
	LAYEY SAND- gray to da	ırk gray.			sc	Observation	
15—	OTAL DEPTH OF BORING	= 14.2' 🗄	BLS				
	•						
20	PAGE 1	of 201	MWO2S ABI	 B_ENVIRO	NMEN	TAL SERVICES.	INC.

	ayport, Fl		LOG OF	WELL: MPT-20-MWO	35		NG NO.	•
LIENT: SOUTHERN DIVISIO			<del></del>			PROJE	ECT NO: 8534-05	OF.
ONTRACTOR: GROUNDWATE	R PROTEC	TION, INC.		DATE STARTED: 05		<del></del>	COMPLTD: 05/05/	95
ETHOD: 4.25" H.S.A.		CASE SIZE: 2"		SCREEN INT.: 3-13			CTION LEVEL: D	
OC ELEV.: 12.01 FT.		MONITOR INST.: F.I.I	_	TOT DPTH: 14.0FT.			TO \$ 5.0 FT.	
OGGED BY: S. SCAVONE		WELL DEVELOPMENT	DATE: 05	/17/95		SITE:	SWMU 20	
L LABORATORY 3	HEADSPACE (ppm)	SOIL/ROCK AND C	CDESCRIPT	ION	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW\$/6~IN	WELL DATA
20500301 X 100%	0.0	GANIC RICH SOIL	ray to gra			SP	Hand Auger	
20B00105 X 100%		AND- as above.					Hand Auger	
	5.	AND- as above.					Observation	
10—								
	С	LAYEY SAND- gray to	dark gray			SC	Observation	
15—	Т	OTAL DEPTH OF BORIN	IG = 14.0°	3L\$				
		·						
20								

TITLE	: U.S. Na	val S	itati	ion, Ma	ayport 	, FL		LOG of	WELL: MPT-21-MV	NO1S	BORI	NG NO.	
CLIEN	IT: SOUTH	IERN	ום ו	VISI0	N, NA	/FACI	ENGCOM				PROJ	ECT NO: 8534-05	_
CONT	RACTOR:	GRO	מאט	WATE	R PRO	TECT	ION, INC.		DATE STARTED:	05/04/95		COMPLTD: 05/04	4/95 
METH	OD: 4.25"	H.S	Α				CASE SIZE: 2"		SCREEN INT.: 5	-15'	PROT	ECTION LEVEL: D	
TOC E	LEV.: 13.2	21 F T	۲.				MONITOR INST.: F.I.I		TOT DPTH: 15.5F	т		TO ¥ 4.5 FT.	
LOGGI	ED BY: S	. SC	AVC	NE			WELL DEVELOPMENT	DATE: 05	5/17/95	· · ·	SITE	SWMU 21	
DEPTH FT.	LABORATO SAMPLE I	RY D.		RECOVERY	HEADSPACE (ppm)		SOIL/ROCK AND C	DESCRIPT	rion	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
	2150010			100%	0.0		ICRETE (5")		- in light top	000	SP	Hand Auger	
-	D,MS,MSC	J		,		SAN	ID- fine with shell frag	gments, gr	ay to light tan.				
5—	2180010	ıχ		100%	0.0	SAN	ID- as above.					Hand Auger	
-						SAN	ND- as above.					Observation	
10						CLA	AYEY SAND- gray to	dark gray			sc	. Observation	
15—													
	-					TO	TAL DEPTH OF BORIN	G = 15.5' E	BLS				
	- - -												
20—							PAG	<u> </u>	MWOIS AR	 B ENVIRO	    NMEN	      TAL SERVICES	S. INC.

TTLE: U.S. Naval Station			LOG of	WELL: MPT-21-M	W02S		NG NO.	<del>-</del>
LIENT: SOUTHERN DIVI		··		1		PROJI	ECT NO: 8534-05	<u> </u>
CONTRACTOR: GROUNDWA	TER PROT	ECTION, INC.		DATE STARTED			COMPLTD: 05/04	795
METHOD: 4.25" H.S.A.		CASE SIZE: 2"		SCREEN INT.: 5	5-15'		CTION LEVEL: D	·-·-
OC ELEV.: 12.79 FT.		MONITOR INST.: F.I.C		TOT DPTH: 15.5F	Т.		TO ¥ 3.5 FT.	
OGGED BY: S. SCAVONE	E	WELL DEVELOPMENT	DATE: 05	/17/95 		SITE:	SWMU 21	
L LABORATORY SAMPLE ID.	RECOVERY HEADSPACE (ppm)	SOIL/ROCK AND C	DESCRIPT OMMENTS	TION	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL GATA
21500201 X 10	0.0	ORGANIC RICH SOIL			///	OL SP	Hand Auger	
21B00203 X 10	0.0	SAND- fine with shell frag	ments, gr	ay.			Hand Auger	
		SAND- as above.					Observation	
10		CLAYEY SAND- gray to o	dark gray.	, mild odor.		sc	Observation	
15—		TOTAL DEPTH OF BORING	G = 15.5° E	BLS		-		
20								

ITLE: U.S. Naval Station, Mayport, FL	LOG o	of WELL: MPT-21-MW03S	BORING	<del></del>	
LIENT: SOUTHERN DIVISION, NAVFAC	CENGCOM			T NO: 8534-05	
INTRACTOR: GROUNDWATER PROTECT	TION, INC.	DATE STARTED: 05/04/	95	COMPLTD: 05/04	/95
THOD: 4.25" H.S.A.	CASE SIZE: 2"	SCREEN INT.: 5-15'	PROTEC	TION LEVEL: D	
OC ELEV.: 12.36 FT.	MONITOR INST.: F.I.D.	TOT DPTH: 15.5FT.	DPTH TO	0 ¥ 3.5 FT.	
OGGED BY: S. SCAVONE	WELL DEVELOPMENT DATE: C	05/17/95	SITE: S	WMU 21	
RECOVERY HEADSPACE	SOIL/ROCK DESCRIF AND COMMENTS		SOIL CLASS	BLOWS/6-IN	WELL DATA
215003Q1	NCRETE (5") ND- fine with shell fragments, r	noist, gray.	SP	Posthole 0 to 4'	
	ND- as above.			Hand Auger	
5—————————————————————————————————————	ND- as above.				
	.AYEY SAND- gray to dark gra	y, mild odor	sc	Observation	
15————————————————————————————————————	OTAL DEPTH OF BORING = 15.5	BLS			
20					

## ATTACHMENT E DATA SUMMARY TABLE

			I	l	ŀ	İ			
S	Navel	Station,	Mayport,	Baila	Ē	<u>₹</u>	SES.	US Naval Station, Mayport, Building 191 SMMU Assessment Report	Report
			Surf	Surface Soil Data	10	ata			

10																						380		380		380							
1005 2411 2201 47-95 UNITS	;	5/85 18/80 18/80	ug/kg	49/kg	ug/kg	ug/kg	56/kg 19/kg	ug/kg	ug/kg	ug/kg ug/kg	<b>100/kg</b>	ug/kg	ug/kg ug/kg	ug/kg ug/ka	ug/kg	ug/kg ug/kg	ug/kg	68/kg	ug/kg ug/kg	ug/kg	69/kg	ug/kg ug/kg	ug/kg ug/kg	(g/kg	. 63/go	ug/kg	4,4g	ug/kg	ug/kg ug/kg	ug/kg	ug/kg		
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L VALUE				•o <del>-</del>	:•×	•	٥٠	91	. •	• •	•	• •	••	•	٠.	==	*O Y	) <b>10</b> 1	0 40	•	)='	o <b>•</b> 0	2:	- · · · · ·	2 9	•	_ •	•••	°2°	9 :	<u>-</u> ••		
1005 2111 2201 4Y-95 UNITS DL		<b>8/8</b> 8/8	6/8 6/8	84/kg	(K)	??	9/2 2/23	16/kg	2 <u>9</u> 3 3	58/kg 58/kg	B 5 6	? ? ? ?	8/8 8/8	<b>19/kg</b> 19/kg	2 2 3 3	2.2 2.3 3.3	8/8 1	7 F	2 2 2 2 3 3	b/kg	29. 39.	2 <u>5</u>	ug/kg	25; 35;	9 / P3   P3 / P3	64/g	- 19/kg	ug/kg	ug/kg ug/kg	ug/kg	ug/kg ug/kg	i er Mike	
R997 GROUI TCSOU 31-N		33: ##:	3 A F F	- 2 <del>-</del>	) = : : • •	) — ( <b>9</b>	n :: 9	) ) o <u>-</u>	∠⊃ -9	⊃ = 9	7.9	9.9	9.9 9.0			) <b>-</b> -	- : • • •			⊃: ••×		2 2 9 9	3:	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	) = 3	, _ , 9	) 	1,,	20 02 20 02	n : •	- <b>9</b>		
VALUE																						360		360		360							
1003 1111 1101 14-95 UNITS DL		ug/kg ug/kg	ug/kg ug/kg	og/kg	ng/kg	ug/kg ug/kg	ug/kg ug/kg	ug/kg	ug/kg ug/kg	ug/kg	19/kg	ug/kg ug/kg	ug/kg ug/kg	ug/kg	ug/kg ug/kg	ug/kg ua/ka	ug/kg	8/8 8/8	ug/kg ug/kg	ug/kg	ug/kg ug/kg	ug/kg ug/ka	ug/kg	ug/kg 	ug/kg	ug/kg ug/kg	ug/kg	19/kg 19/kg	ug/kg ug/kg	ug/kg	ug/kg ug/kg		
R9971003 GROUP111 TCS00101 31-MAY-95 QUAL UNITS		<b>5</b> 5	3 S	· · ·	5 5	55	5 5	5 <b>5</b> 5	55	5 5		55	5 5	35	55	. ·						360 u	,	<b>=</b>	<b>3</b> 2	360 U				•			
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3 3 9		9.0	99	93	22	99	91	79	7.2 2.2		<b>2 2</b> 1	2 <u>9</u>	22	. <u></u>	22	2.2	· <b>9</b> .	22	22	9	2 <del>2</del>	<b>9</b> 9	· 2.	99.	<b>9</b> 5	2.2	9:	22			<b>7</b> 2		
R9971003 GROUP111 TCS00101 31-MAY-95 QUAL UNITS			2/8 26/8	<b>-</b>	) 	5.5 5.5 5.8			8/8 8/8 7.5											S u wa/kg	32		.3.	<b>-</b>	<b>-</b> -		<b>-</b> :	33	5 U ug/kg 10 R ug/kg	-	31 C 45/48		
VALUE									<del>-</del>												^=		2:		9 Y		-		220	 			
Lab Sample Number: Site Locator Collect Date:	ca/ka			*******			5585855		tessis.	08888	Wan:						2000				**********		60555 NA	100000000	88884					(141vd)			
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		thane hene	toride	Hethylene chloride	Acetone Carbon disulfide	1-Dichloroethere	1,2-Dichloroethene (total)	Chlorororm 1,2-Dichloroethana	ne ich Loroeth	Carbon tetrachloride	loropropen	cis-1,5-Dichloropropene Trickloroethene	Dibromochioromethere	Benzene	3-Dichlora A	4-Hethyl-2-pentanone	Tetrachloroethene	Tetrachlor	nzene	2	Xylenes (total) Dichlorodifluoramethane	Trichlorofluoromethane		odomethane .4-Dichlorobenzene	trile	i bromometnane . 2-bich Lorobenzene	ethylviny	thacrylete ichloropro	trans-1,4-0ichloro-2-butene	Tetrachion	, 2-0 ibramo - 3 - chi oropropane , 2-0 ibramoe thane		
	WOLATILES	Chloromethane Bromomethane	Vinyl chloride	Fethyler.	Retone Carbon d	55	1,2-015	1,2-0 fch	2-Butanone	Carbon	1,2-Dich	1.5.1	Dibromoc	Benzene	Bromoform	4-Nethyl-2	Tetrachi	1,1,2,2. Toluene	Chlorobenzene	Styrene	Xylenes (total) Dichlorodifluor	Trichlor	Acrolein	1,4-Dichlor	Acrylonitrile	1.2-Dichtorober	2-chlore	1.2.3-Tr	trans-1	1.1.1.2	1,2-0 ibr		

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ding 15	R9971003 GROUP111 TCS00101 31-MAY-95 GUAL UNITS	LIG/KG LI
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ation,		226 227 227 257 111 111 110 110 110 110 110 110
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	Lab Sample Number: Site Locator Collect Date:	ECTED A
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R9971009 GROUP111 TCS00401 31-MAY-95 QUAL UNITS	
VALUE	9X 9X
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Lab Sample Number: Site Locator Coliect Date:	ug/kg
Leb Samp	e (total) e (total) e (total) hane ide mine mopene nopropene opropene opropene methane me
	CLATILES Chloromethane Sironmethane Vinyl chloride Chloroethane Carbon disulfide 1,1-Dichloroethane 1,2-Dichloroethane 1,2-Dichloropropene 1,2-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane 1,1-2-Trichloroethane
	VOLATILES Chloromeths Sromomeths Vinyl chlor Chloroeths Wethylene c Acetone Carbon disu 1,1-Dichlor 1,2-Dichlor 1,2-Dichlor 1,2-Dichlor 1,2-Dichlor 1,2-Dichlor 1,2-Dichlor 1,1-2-Tich Carbon Tari Bromodich (1,2-Dichlor 1,1-2-Tich Carbon Tari Bromodich (1,2-Dichlor 1,1-2-Tich Chloroet Trichloroet Trichloroet Trichloroet 1,3-Dichloroet 1,3-Dichloroet Trichloroet 1,3-Dichloroet 1,3-Dichloroet Trichloroet Trichloroet 1,4-Dichloroet Trichloroet Trichlo

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R9971009 GROUP111 TCS00401 31-MAY-95 QUAL UNITS	88 88 88 88 88 88 88 88 88 88 88 88 88
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R9971009 GROUP111 TCS00401 31-MAY-95 QUAL UNITS	100/kg 100/kg 100/kg 100/kg 100/kg 100/kg 100/kg
R9 GR 1C 31 VALUE QL	20-028-20-20-20-20-20-20-20-20-20-20-20-20-20-
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R9971007 GROUP111 TCS00301 31-MAY-95 QUAL UNITS	6
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R9971007 GROUP111 TCS00301 31-MAY-95 QUAL UNITS	
VALUE Q	nn6nnn6n6n6n6c666
Lab Sample Number: Site Locator Collect Date:	ether 2-butane cethane opropane
	Dibromomethane 1.2.bichlorobenzene 2.61 oroethylvinyl ether Ethyl methacrylate 1.2.3-Trichloropropene trans-1,4-0ichloro-2-butene 1.3.1.2-Tetrechloropropene 1.2.0ibromoethane 1.3.0ibromoethane 1.3.0ibromoethane 1.4.0ibromoethane 1.5.0ibromoethane
	Dibromomethane 1,2-Dithlorobenzene 2-Chiorothylvimyl ether Ethyl methacrylate 1,2,3-Trichloropropane 1,2,3-Trichloropropane 1,3,1,2-Tetrahiloroethane 1,2-Dibromoethane 1,2-Di

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R9971010 GROUP111 TCS004010 31-NAY-95 VALUE QUAL UNITS DL	
R9971010 GROUP111 TCS004010 31-MAY-95 QUAL UNITS DL VA	111
Leb Sample Number: Site Gollect Date: VALUE	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
qe1	VOLATILES Chloromethere Viloromethere Vilorothere Vilorothere Carbon diaulfide 1,1-Dichlorothere 1,1-Dichlorothere 1,2-Dichlorothere 1,2-Dichlorothere 1,2-Dichlorothere 1,1-Dichlorothere 1,1-D

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	rile cor	
	13-chonomethane 13-chlorothylvi Ethyl methacryl 13-3-Trichlorothyl 13-chlorothyl alcoho 13-chloromethal 14-chloromethal	
	Dibroncmethane  1,2-0 chlovonzene  2,5-10 chlovonzene  1,2,3-17 chloropropane  1,2,3-17 chloropropane  1,2-0 fbrono-3-chloropropane  1,2-0 fbrono-3-chloropropane  1,2-0 fbrono-thane  1,2-0 foropropene  Acetonitrile  Acetonitrile  Rethacrylonitrile  Methacrylonitrile  Methacrylonitrile  Methacrylonitrile  Methacrylonitrile  Methacrylonitrile  Methacrylonitrile  Propionitrile  Propionitrile	

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Lab Sample Mumber: Site Locator	Number: Site Locator		R9971003 GROUP111 TCS00101			R9971005 GROUP111 TCS00201			R9971007 GROUP111 TCS00301	907 301		2521	R9971009 GROUP111 TCS00401	
Polle	Collect Date:	VALUE	31-MAY-95 QUAL UNITS	S	VALUE	31-MAY-95 QUAL UNITS	رر م	VALUE	ST-MA GUAL	•	וו	VALUE OIL	QUAL UNITS	טר
	5000000													
SENIVOLATILES	ug/kg	376	•	32	ğ	11 C		, C	II 07	in/ka	3	380 u	va/kg	380
M-MIT-05001 met.nyt.emine Phenot	5000000	3				, ,		28	n 031	8/8 8/8	340	200	ug/kg	280
Anitine		<b>3</b> ;	<b>-</b>			_ ·			- 	9 S	35		09/kg	086
bis(2-chioroethyl) ether	00000	3	<b>.</b>	7 Y					9 19		340		2 /kg	380
Benzyl Alcohol 7-Wethylchenel	-00-04-40	Z Z				· -			340 U	75	2		CG/kg	380
bis(2-Chloroisopropyi) ether	200000	<b>3</b>	_			_ _;			ے در دروں	2.5°	<b>3</b>		64/49 64/49	285 285 285
N-Nitroso-di-n-propyiamine	(penece	33	5/8°5					380 380		2 2 3 3	13		56/kg	8 <b>8</b>
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tsophorone		3;	<b>»</b> :	360		<b>=</b> :		380 Car	= = 3;	9 <u>1</u>	95 25 25		63/kg ra/kg	
2-Nitrophenol	000000	33							200	? ? ? ?	<b>3</b>	_	ug/kg	380
Benzole acid	0000r.b	:E	, ,	_	•	· >		•		ug/kg	8; -	1800 1 200 1 200 1 200	84/85 75/18	1800
bis(2-thloroethoxy) methane	ee 5v."	3:	<b>.</b>			0 C ug/kg			- - - - - - - - - - - - - - - -	2	7 9		ug/kg	380
2,4-Dichlorophenol	t Syr i r i	₹¥				. <b>.</b> .			340 U	<b>G</b> /kg	3,0	380 E	cg/kg	380
Nophthelene	*,********	3	•			<b>-</b> :		380	- -	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	950	⊃ = 280 2	ug/kg	2 E
4-Chloroeni ine		23	? } <b>?</b> !	•						7.2 3.3	12	288	ug/kg	380
Kexachioroxitoolene &-Chioroxi-methylohenol	*********	3	, -			. –		380	n 0%	<b>64/k</b>	3	780 280	ug/kg	280
2-Nethyl naphthal ene	200000	3	<b>.</b>			<b>-</b> :			→ : • :		7.2		64/kg	
Hexachlorocyclopentadlere	000000000	33				0 0 49/kg		380		9 5 2 5	35	388	68/kg	88
Dimethylphthalate	200.00000	3		9		<b>,</b> ,	,			ug/kg	97	380	49/kg	380
2,4,5-Trichlorophenat	ere en ou	25 25	<b>-</b> -	- 9:		0 U ug/kg			- 29	2) <b>2</b> )	34	380 0	2 6 2 6 3 7 5 8	
Z-Chloropaphthelene Z-tifrnapiilae	ie ray ya r		, ,			. =	_			: 2 }	2	1600 U	ng/kg	1800
Acenaphthylene	, erene	Z;	<b>-</b> :	360	8	<b>-</b> :			340 u	7. 7.	33		ug/kg vg/kg	
2,6-Dinitrotolume	*********			•		- -		•	。 2 3 3 3	2	2	1800 U	19/kg	1600
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2,4-Dinitrotoluene	2-12-14-14-14-14-14-14-14-14-14-14-14-14-14-	8	<b>-</b> -			10 U Ug/kg			D 0%	5/KG	35		64/85 C8/85	88
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Fluorene		3	<b>-</b> :	•		<b>-</b> :		•	740 U	<b>19/kg</b>	3.5	2008	19/kg	1800
4-Nitroeniline						0 0 ug/kg			。 3 3 8	2 2 3 3	<u> </u>	1800 U	ug/kg	1800
N-Witrosodiphenylamine (1)		3				_				€a/kg	2 X	280 E	ug/kg	380
1,2-Dipherylhydrazine		<b>3</b> :	<b>-</b> :			<b>-</b> :			) 	.54/kg	3 5		08/kg	900
4-Bromophenyl-phenylether		33	) } >=			0 0 09/kg			7 70 70 70 70 70 70 70 70 70 70 70 70 70	54/8 8/8	3,0	380 0	ug/kg	380
Pentacklorootens			)		_	_ 	_		700 C	ng/kg	2	1800 U	ug/kg	1800
Phenanthrene		7.	7		380	<b>-</b> -		380	2 C C	<b>ug/kg</b> 16/kg	340	7 /S	69/kg	
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	R9971009 GROUP111 TCS00401	31-MAY-95 QUAL UNITS	ug/kg ug/kg	ug/kg	2 /S	ug/kg	54/55 54/55	. 69 /kg	ug/kg	ug/kg	45/kg	ug/kg	09/Kg	19/kg	ug/kg	Ug/kg	2 /S	ug/kg	09/kg	ug/kg	ug/kg	6 /kg	ug/kg	ug/kg	. 19/kg	59/kg	ug/kg	ug/kg	69/kg 78/kg	ug/kg	ug/kg	ug/kg	8/kg 5/kg	g/kg	ug/kg	ug/kg	ug/kg	ug/kg	5 5 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7	
	R99 GR0 TCS	31- VALUE QUA	67 J 380 U	D 092	. 2	380 C	D 095	388	380 U	380	380 UJ	1800 U	380 UJ	380 0	_	1800 U.S		380 U	386 	1800 U	1800 U	1800 U.J	380	380 0	1800 1900 1900	⊃ : 280 2	288	380 n	380 0	380	380 U	18000 U	1800 U.	38000 R	380 n	280 280 280 280 280	18000 U	1800 UJ	18000 U.S.	
		ם. א	07£	D69	38	9X;		250	996	340	20%	<u>2</u> ;	95		340		3,03	340	<b>9</b> 1	<u> </u>	921		34	240	<b>3</b> 2	350	20	340	83 83	350	97.	3 <u>8</u>	2	3,000	3,0	05°	1200	2; 2;		
	R9971007 GROUP111 TCS00301	31-MAY-95 QUAL UNITS	ug/kg ug/ka	84/85 11/15	2 3 /S	ug/kg	64/65 CO/12	? ! }	ug/kg	8/95 	?.S ? S	ng/kg	. ug/kg	2 2 3 3	ug/kg	5)/B1	2 2 3 3	(4/kg	<b>4/k</b> 0	2 9 3 9	ug/kg	19/kg	7 57 /B	By/ka		59/kg	2.2 3 3	ea/kg	69/kg 190/kg	LE/KE	5/85 5/85		J ug/kg	2,2 3,3	By/Sn	8/kg Ca/kg	? <del>?</del> ? ?	8//8n - r	5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	
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e Soil Data	R9971005 GROUP111 TCS00201	31-MAY-95 Qual Units	ug/kg	ug/kg	69/89 84/89	ug/kg	ug/kg	69/kg	eg/kg	J ug/kg	us/ka	ug/kg	J ug/kg	ug/kg ug/ka	ug/kg		J ug/kg us/ka	ug/kg		ug/kg ug/ka		1 ug/kg			64/67 64/67	By/Bn	64/89 84/89	ug/kg	ug/kg	ug/kg	ug/kg	us vg/kg us vg/kg	J ug/kg	64/g	ug/kg	69/kg	us/kg	J ug/kg	J ug/kg	
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		ដ	360	<b>尼</b> :	35	360	96.	3 3	360	386	33	12	360	3 3	360	92	33	38	99.	3	1021		392	360		360	32	360	2×	38	8	38 22 2	2	8,000 2,000 2,000	360	36.	2007	20.	360	<u> </u>
	R9971003 GROUP111 TCS00101	31-MAY-95 QUAL UNITS	ug/kg	8y/Bn	8 1/2 2 1/2 3 1/2		By/6n	9/2 9/2	3/S	ug/kg	8 / E	wg/kg	_	83/83 83/83	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5		•••	2 <u>2</u> 3 3		5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2					UJ 09/kg U 09/ka	e ug/kg	. vg/kg		8/8 1			2000 E		<b>8</b> /81		J ug/kg			2/\$ 2/\$ 2/\$	
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			Pyrene	3,3-Dichlorobenzidine	Benzo (a) anthracene	cnrygerm bis(2-Ethylhexyl) phthalate	Di-n-octylphthalate	) fluoranthene		Indena (1,2,3-5d) pyrene	(a, b) anthr	Senta (Will, 1) perytera 2-Picoline	Hethyi methanesulfonate	Ethyl methanesulfonate	Acetopienom N-Nitroscoiperidine	Phenyl-tert-butylamine	2,6-Dichlarophenol	. Withough in Docytamine	M-Nitrosopyrrolidine	Tetracklor	Pentach Lorobenzene	1-Kaphthylemine	2.3.4.6-Tetrachlorophenol	tin	4-Aminobiphenyl Sentachipponitrobenzene	*	p-(Dimethylemino)azobenzene 7 12 himethylemino)azobenzene	(cho anthre	•	M-Witrosometmyletnylamine M-Witrosomorpholine	. e.p	Hexachloropropene C-Phanylanadiagine		ole	1 trobenzene	-o-toluidir	1,3,5-Trimitrobenzene	rilene	3,3-Dimethylbenzidine	nexacini propilene
			Pyrene	3,3-0ich	Bento (1	bie(2-Et	Di-n-oct	Benzo (b)	Rente (1)	Indeno	7 Denz	2-Picoline	Hethyt I	Ethyt m	N-Nitrosopio	Phenyl-	2,6-Dic		K-WILLS	Benzidine	Pentach	1-Kepht	2.3.4.6	Phenacetin	4-Amino	Pronamide		3-Hethy	Pyridine	#-E [ [ ]	o-Totuídine	Hexach!	Safrole	Isosafrole	13-01	5-Hitro	1.5.5.	Methapy	3,3-0,	nexach (

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R9971009 GROUP111 TCS00401 31-MAY-95 QUAL UNITS	09/kg 08/kg 08/kg 08/kg
R99 GRO TCS 31-3 VALUE QUA	1800 U 380 U 380 U 380 U 380 U 380 U
ಕ	11 (17) (17) (17) (17) (17) (17) (17) (1
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VALUE	1700 to 1780 t
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Lab Sample Number: Site Locator Collect Date:	DETECTED
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	2. Chloropherol 3. 4. 4. Mothylpherol 1. 2. Acetyl aninof Lubrare 2. Acetyl aninof Lubrare U = NOT DETE THE ADDITION

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R9971010 GROUP111 TCS004010 31-MAY-95 QUAL UNITS

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SEMIYOLATILES N-Nitrosodimethylamine

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R9971010 GROUP111 TCS00401D 31-MAY-95 QUAL UNITS

Methyl methamagulfonate Ethyl methamasulfonate

enzo (g.h.l) perylena

01-n-Butylphthelate Fluoranthene

Nitrosopiperidine enyi-tert-butylanine

5-Tetrachlorobenzene -Naphthylamine -Naphthylamine ,3,4,6-Tetrachlorophenol 4-Aminobiphenyi Pentachioronitrobenzene

p-(Dimethylamino)azobenzene 7,72-Dimethylbenz(A)Anthrace 3-Methylcholanthrene

itrosomethylethylamine I-Nitrosomorpholine

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2 /S		- PX/83	<b>19/kg</b>	59/kg	ug/kg	ug/ka	ug/kg	ug/kg	ug/kg	28/kg	ug/kg	ug/kg	ug/kg	ug/kg	
3		8	23								370 U				

2-Acetylaminofluorene

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R9971009 Group111 TCS00401 31-MAY-95 QUAL UNITS	64/80 66	
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R9971005 GROUP111 TCS00201 31-MAY-95 QUAL UNITS	62/65 62/65 62/65 62/65 62/65 62/65 62/65 62/65 62/65 62/65 63/65	
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GROUP111 TCS00101 31-MAY-95 QUAL UNITS	66,666 66	
R99 GRC TC3 31- VALUE GUM	**************************************	
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	PESTICIDES/PCBB aipha-BHC delta-BHC delta-BHC gamma-BHC (Lindare) Heptrachlor epoxide Endrin Liderin L	
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R9971010 GROUP111 TCS004010 31-MAY-95 QUAL UNITS

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bera-BHC
delta-BHC
delta-BHC
gamma-BHC
Keptachlor
Aldrin
Heptachlor
Endosulfan I Endosulfan II 4,4-DDD Endosulfan sulfate 4,4-DDT Methoxychlor Endrin aldehyde Endrin ketone Chlordane Chlordane

ATION LIMIT IS ESTIMATED 2: 1,3-1, AND 1,4-DICHLOROBENZENE WERE GENERATED FROM THE SVOC (8270) ANALYTICAL RUM. U \* NOT DEFECTED R = RESULT IS REJECTED

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THE ADDITIONAL LISTINGS OF RESULTS FOR 1,2:;

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R9971003 GROUP111 TCS00101 31-MAY-95 QUAL UNITS

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Locator Collect Date:

R9971005 GROUP111 TCS00201 31-MAY-95 QUAL UNITS

R9971007 GROUP111 TCS00301 31-MAY-95 QUAL UNITS

R9971009 GROUP111 TCS00401 31-NAY-95 QUAL UNITS

1.2 .58 .25 .60	8 8 17 25 4 2 4 7 7 7 7 4	8.t. 25.	3.1 3.1 .28 .48		
mg/kg mg/kg mg/kg	33/kg 33/kg 33/kg 33/kg 33/kg	197 Kg 199 Kg 199 Kg 199 Kg 199 Kg 199 Kg	mg/kg mg/kg mg/kg		
1.2.4 1.5.4 1.5.4			. 14 U 5.7 J 10.6 J		RUN.
สร	ลี่ย์ พ่สบ์ถื <u>"</u>	<u> </u>	ii Sivia		SVOC.(8270) AMALYTICAL RUM
97/2	20/20 20/20	10/kg 10/kg 10/kg 10/kg 10/kg	mg/kg mg/kg mg/kg		(02.88) 00
22.5.7	AND WILLIAM CONTRACTOR	. :0:2: 2:1:2: 2:2:3:	12.2 2.8.2 1.8.5 1.5.3		
1.2 58 25 25	66. 8.5.5.5. 4.	.03 1.3 32	3.1 3.1 .28 .48		GENERATED
mg/kg mg/kg mg/kg	100/kg 100/kg 100/kg 100/kg 100/kg 100/kg 100/kg		98/kg 98/kg 98/kg		ZENE WERE
1.2 u 58 u 5.4 4.4	1 82. 1 60. 1 82. 1 60. 1 9. K	83. 1 22. 2 22. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2.	14. W. W. V.		NOT DETECTED R = RESULT 18.REJECTED ESTHATED VALUE UJ = REPORTED QUANTITATION LINIT IS ESTIMATED ADDITIONAL LISTINGS OF RESULTS FOR 1,2-; 1,3-; AND 1,4-DICHLOROBENZENE WERE GENERATED FROM THE
[ 9 <del>2</del> ]	84 <u>2885</u> 2	8.7.±.	Liu 23		INIT IS EST
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20000000000000000000000000000000000000	144. 12.6. 12.6. 1.76. 1.11.	2.00. 2.00.	. K.		IS REJECTE ORTED GUAN RESULTS FOR
mg/kg					R = RESULT UE UJ = REI STINGS OF I
	16.				T DETECTED TIMATED VAL DITIONAL LI
(WATER)					
INCRGANICS (WATER) Antimony Arsenic Berium	Beryllum Catcium Chromium Cobalt Copper Cyanide Iron	Megnes I Ch Nenganese Nercury Nickel Selenich Selenich	Sodium The Lifum Tin Veradium Zinc		

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VALUE Site Locator Collect Date: Lab Sample Number:

R9971010 GROUP111 TCS00401D 31-MAY-95 QUAL UNITS

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Antimony
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R9971006 GROUP111 TCB00203 31-MAY-95 QUAL UNITS	ug/kg ug/kg ug/kg	ug/kg ug/kg ug/kg	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	ug/kg ug/kg ug/kg	64/85 64/85 64/85 64/85 64/85	49/kg 19/kg 19/kg	09/kg 09/kg 109/kg	19/kg 19/kg 19/kg		ug/kg ug/kg ug/kg		08/kg 08/kg 08/kg	ug/kg ug/kg
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ample Number: Site Locator Collect Date:	ug/kg						(M) (1 00000000000000000000000000000000000		50100004.0000000			000000000000000000000000000000000000000	
Leb Sample Number: Site Locator Collect Date:	thane	Vinyl chloride Chloroethane Methylene chloride Acetone	1.1-Dichiorethene 1,1-Dichiorethene 1,2-Dichiorethene (total) Chioroform	1,2.0tch.ordethere 2.Butanove 1,1,1.Trichloroethere Carbon tetrachloride Bromodichloromethere	1.2-Dichloroprobane cie-1,3-Dichloropropene Trichloroethene Dibromochloromethane	Land 13-bich propropere trans-1,3-bich propropere Bromoform 4-Hethyl-2-pentanore	2-Hexanone Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene	enzene nzene (total)	Dichlorodffluoromethane Trichloroffluoromethane Trichlorofensene	odomethane 4-bickiorobenzene crytonitrile	Dibromomethane 1,2-Dichlorobenzene 2-Chloroethylvinyl ether Ethyl methacrylata	1,2,3-Trichloropopene trans 1,4-Dichloro-2-butene ischutyl elichlor 1,1-1,2-Tetrachloroethane	, 2-0 ibromos thane
	VOLATILES Chipromethane Bromomethane	Vinyl Chloride Chloroethane Methylene chlo Acetone	000000 000000 000000000000000000000000	Z-Butan Z-Butan Carbon	Cie.13	Benzere trans-1,3 Bromoforts 4-Methyl.	2-Hexanome Tetrachlor 1,1,2,2-Te Toluene	Chlorobenzene Ethylbenzene Styrene Xylene	Dichlora Trichlora 1,3-0fch	1 4-Dichloroby Acrylonitrile	Dibromd 1,2-Dic 2-Chlor Ethyl m	1,2,3-T trans-1 1sobuty	1,2-016 1,2-016

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R9971006 GROUP111 TCB00203 31-NAY-95 QUAL UNITS DL	
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R9971004 GROUP111 TCB00103 31-MAY-95 VALUE QUAL UNITS DL	230 R US/Kg 230 6 U US/Kg 250 720 U US/Kg 120 720 U US/Kg 120 12 U US/Kg 12 12 U US/Kg
Lab Sample Number: Site Locator Collect Date:	1.4. Distance 3. Chicroproper Activative for the first form of the following form of the

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R9971011 GROUP111 TCB00403 31-MAY-95 QUAL UNITS	
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R9971008 GR0UP111 TC800303 31-MAY-95 VALUE QUAL UNITS DL	22224 22224 22224 22224 23
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R9971011 GRQUP111 TCB00403 31-MAY-95 QUAL UNITS	18/48 18/48
R99 GRC TCF TCF 31- VALUE QU	n 04£
R9971011 GR0UP111 TCB00403 31-MAY-95 VALUE QUAL UNITS DL	6. U. ug/kg 6. 6. U. ug/kg 7.30 R. ug/kg 7.30 R. ug/kg 7.30 R. ug/kg 7.30 II. ug/kg 7.30 III. ug/kg 7.30 II. ug/kg 7.30 II. ug/kg 7.30 II. ug/kg 7.30 II. ug
R9971008 GROUP111 TCB00303 31-MAY-95 VALUE QUAL UNITS DL	400 U U U U U U U U U U U U U U U U U U
R9971008 GR0UP111 TC800303 31-MAY-95 VALUE QUAL UNITS DL	6 U ug/kg 6 6 U ug/kg 6 6 U ug/kg 6 6 U ug/kg 725 N ug/kg 6 6 U ug/kg 725 N ug
Lab Sample Mumber: Site Locator Collect Date:	Ulbromomethane 1.2-bithlorobensene 2-chloroethylvinyl ether Ethyl methacryliste 1.2.3-1-ichloropropane 1.2.3-1-ichloropropane 1.3.1-1-1-2-ibromo-thane 1.2-bibromo-3-chloropene 1.2-bibromo-thane 1.2-bibromo-than

U \* NOT DETECTED R = RESULT IS REJECTED

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THE ADDITIONAL LISTINGS OF RESULTS FOR 1,2-; 1,3-; 1,3-; AND 1,4-DICHLOROBENZENE WERE GENERATED FROM THE SVOC (8270) ANALYTICAL RUN.

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R9971011 GROUP111 TC800403 31-MAY-95 QUAL UNITS	ug/kg ug/kg	ug/kg	2 /2 2 /2 2 /2	eg/kg	69/kg	0 (A)	56/kg	ua/ka	4/kg	ug/kg	cg/kg	09/40 04/60	ug/ko	ug/kg	ug/kg	64/61 64/61	(4/g)	ug/kg	ug/kg	5, 5 5, 5	6 /8/89	, 54 54 54	ug/kg	ug/kg		5 5 5 2	ug/kg	54/kg	2 (S	ug/kg	5,4 8,4	5,5 2,4 2,4	ug/kg	og/kg	9/Kg	\$ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	ug/kg	ug/kg	9/Kg	ug/kg	ug/kg			
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R9971008 GRCUP111 TCB00303 31-MAY-95 QUAL UNITS	ug/kg ug/kg	ng/kg	2 <u>3</u>		ug/kg	64/kg	2 <u>3</u>		7.2 3 S	ca/ka	ug/kg	8 ; 8 ;	9 2 / S	2 S (S)	sa/kg	BX/85		? <u>?</u> ? §	ug/kg	B <b>y</b> 5	7 : 9 :	79/VE	<b>19/kg</b>	ug/kg	8) (8)	7 2 3 3	eg/kg	<b>9</b>	7 S	ug/kg	68/kg	93/ <b>9</b>	ue/kg	<b>58/kg</b>	8/kg	27/65 27/95	re (	ga/kg	. 46/kg	2 5 2 /g	ug/kg			
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006 111 203 17-95 UNITS	ug/kg ug/kg	ug/kg	49/kg	ug/kg	ug/kg	ug/kg	U9/Kg	.19/kg	ug/kg ug/ka	ug/kg	ug/kg	ug/kg	09/Kg	ua/kg	ug/kg	ug/kg	ug/kg .is/ka	24/gn	ug/kg	ug/kg	ug/kg	ug/kg ug/ka	Ug/kg	ug/kg	ug/kg	19/kg	ug/kg	ug/kg		ug/kg	ug/kg		ug/ka	ug/kg	ug/kg	U9/K9	2/kg	ug/kg	ug/kg	ug/kg ug/kg	ng/kg			
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R9971004 GROUP111 TCB00103 31-MAY-95 QUAL UNITS	ug/kg	7 9 7 9	9/kg	87/83 29/40	. By   25   15	ug/kg	84/8a	5 / Kg	84/85 194/81	2 (2) (2)	sa/kg	cg/kg	69/kg	63/63 03/01	mg/kg	<b>5</b> 8/kg	64/kg			BX/Bn			. 55 kg	. B . S . S		83/gs	? ?	ug/kg	8/89 1	23/S	ug/kg		97/61 19/7		By/Bn	ug/kg	5 (§) (§)	eg/kg		64/kg				
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Lab Sample Number: Site Locator Collect Date: V					, , ,				٤.			•					2			1257e						2	enzene	thracene																
Ë	Pyrene	3.3-Dichlorobenzidine	Benzo (a) anthracene	Chrysene Laws & Thithelate	Di-n-octylphthalate	Benzo (b) fluoranthene	Benzo (k) fluoranthene	Benzo (a) pyrene	Indeno (1,2,3-cd) pyrene		2-Picoline	Methyl methanesulfonate	Ethyl methanesulfonate	Acetopherone and a second control of the sec	Phenyl-tert-butylamine	2,6-Ďichtorophenot	A-zitroso-di-n-butylemine	N-Nitrosodiethylbaine	Renzidine	1,2,4,5-Tetrachlorobenzene	Pentach lorobenzene	1-Naphthylamine	2.Maphinylamine 3.1.2.4.Tateachlocophami	Phenacetin	4-Aminobiphenyt	Pentach loroni trobenzene	C-(Dimetholemino)&zobe	7,12-Dimethylbenz(A)Anthracene	3-Rethyl cholanthrene	VYTIGINE  0.01 tensommetholetholemine	N·Ni trosomorpholine	o-Toluidine	Hexachioropropene	Safrole	Isosafrole	1,4-Naphthoquinone	n. 3-0-ini trobenzene	1.3.5-Trinitrobenzene	4-Nitroquinoline-1-oxide	# # District Land ( )	Hexachlorohene	•		

굼 R9971011 GROUP111 TCB00403 31-MAY-95 QUAL UNITS 1800 tr 370 tr 370 tr 1800 tr U \* MOT DETECTED R = RESULT 1\$ REJECTED J \* ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT 1\$ ESTIMATED THE ADDITIONAL LISTINGS OF RESULTS FOR 1,2\*; 1,5\*; AND 1,4-DICHLOROBENZENE WERE GENERATED FROM THE SVOC (8270) ANALYTICAL RUN. 占 R9971008 GROUP111 TCB00303 31-MAY-95 QUAL UNITS US Naval Station, Mayport, Building 191 SWMU Assessment Report Sub-Surface Soil Data 2000 U 400 U 400 U 2000 U 2000 U VALUE 2100 430 430 2100 430 ద R9971006 GROUP111 TCB00203 31-MAY-95 QUAL UNITS ug/kg ug/kg ug/kg 2100 U 430 U 430 U 2100 U 430 U VALUE 겁 R9971004 GROUP111 TCB00103 31-MAY-95 QUAL UNITS VALUE Locator Collect Date: Lab Sample Number: 2-Chiorophenol 3- E 4-Methylphenol (2) Hexachioropropene 2-Acetylaminofluorene

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	STICIDES/PCBs at pha-BHC detra-BHC detra-BHC gamma-BHC (Lindare) Heptachlor Findosulfan I A,4-D0E Endosulfan II A,4-D0E Endosulfan Sulfate A,000-1221 Arocior-1225 Arocior-1254 Arocior-1254 Arocior-1254	
	PESTICIDES/PC88 aiphe-BHC beta-BHC detta-BHC Aldrin Redosulfan II f,4-DDF Endosulfan II f,4-DDF Endosulfan II f,4-DDF Endosulfan SU f,4-DDT Rethoxychlor Endrin aldehy Arcolor-1224 Arcolor-1224 Arcolor-1224 Arcolor-1232 Arcolor-1232 Arcolor-1248	

U \* HOT DETECTEO R = RESULT 18 REJECTED J \* ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT 18 ESTIMATED THE ADDITIONAL LISTINGS OF RESULTS FOR 1,2:; 1,3:; AND 1,4-DICHLOROBENZENE WERE GENERATED FROM THE SVOC (8270) ANALYTICAL RUN.

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IMORGANICS (MATER) Antimony Arsenic Berium Beryllium	mg/kg	1,2 U mg/kg 4,2 U mg/kg 4,1 1 mg/kg 107 1 mg/kg	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1.3 U mg 2.2 U mg 1.4 L 1.4 mg	mg/kg mg/kg mg/kg mg/kg	1.3 1.39 1.28 1.78 1.1	1.2 U mg/kg .08 UJ mg/kg 2.7 J mg/kg .15 J mg/kg	22725 22725 22725	1.5.5.6.6	U mg/kg U mg/kg U mg/kg U mg/kg	1.1 2.2 5.0 7.0
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Magnes ium Marganese Mercury Mickel Selenium Siliver		103 U mg/kg 113 U mg/kg 112 U mg/kg 133 U mg/kg	និរិត្តដ	2223	8	20.55 20.55	.03 U mg/kg 1.4 U mg/kg 1.2 U mg/kg 34 UU mg/kg	200 200 200 200 200 200 200 200 200 200	. ::::::::::::::::::::::::::::::::::::	19/48 199/48 199/48 100/48	ន់រីក់ដ
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U \* NOT DETECTED R = RESULT IS REJECTED J \* ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED THE ADDITIONAL LISTINGS OF RESULTS FOR 1,2:; 1,3:; AND 1,4-DICHLOROBENZENE WERE GENERATED FROM THE SVOC (8270) ANALYTICAL RUN.

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	SEMIVOLÁTILES	M-Witroso Phemoi	bis(2-Chloroet	2-Nethylpherol	N-Witroso-di-n-p	Nitrobenzene Teoriograpi	2-Kitroph	8enzolc 4	5,4-0 icht	1,2,4-Tri	4-Chloroaniline	4-thloro-	2-Nethyl Hexachlor	24,6-17	2,4,5-1r	2-Chloromaphth	Acenaphth	Z.6-Dinitrotol 3-Kitroaniiine	Acenaphthene	4-Nitrophenol	Dibenzofuran	Diethylp	fluorene	4-Nitroaniline	4,6-0[5]	1,2-0104	4-Bromopi	Pentachi	Phenanthrena	DI-n-8ut	Pitorent

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Lab Sample Number:         R9971004         R9971006         R9971006         R9971011         R9971011           Site         GROUP111         GROUP111         GROUP111         GROUP111           Locator         TCB00403         TCB00203         TCB00403         TCB00403           A1-MAY-95         31-MAY-95         31-MAY-95         31-MAY-95           Collect Date:         VALUE         QUAL UNITS         DL         VALUE         QUAL UNITS         DL         VALUE         QUAL UNITS         DL	QUAL UNITS DE VALUE MOAL UNITS DE VALUE GOAL ONITS DE VALUE	430 400 U 4g/kg 400 370 U 4g/kg	360 U US/Kg 360 430 U US/Kg 430 U US/Kg 400 U US/Kg 500 U	Aviso of the state	BAJON 11 OZY TATAN 11 OZY CZY AVEN NOC BAJON NOC STATE N	SOUTH THE TANK THE TA	200 UG/Kg 500 AUC 11 10 UG/Kg 4.30 AUC 11 10 UG/Kg 4.30	350. US/Kg 350. US/Kg 450. US/Kg	280 G 787 C	PACE TO THE PACE T	580 U 1957 C	250 13 08/48 230 13 08/48 230 250 250 250 250 250 250 250 250 250 25	Tank 11 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	100 1 2000 1 2000 1 00/kg 2100 2000 U 04/kg 1000 U 08/kg 11	140 11 107kg 160 UJ UG/kg 430 400 UJ UG/kg 400 370 UJ UG/kg	380 ti 1467kg 380 430 U Ug/kg 430 400 U Ug/kg 400 370 U Ug/kg	380 U LG/kg 380 430 U UG/kg 430 U UG/kg 430 U UG/kg	380 U UG/KG 380 430 U UG/KG 400 U UG/KG 400 370 U UG/KG	1900 U ug/kg 1900 2100 U ug/kg 2100 U ug/kg 2000 U	380 UJ UB/Kg 380 430 UJ UB/Kg 430 UJ UB/Kg 430 UJ UB/Kg 370 UJ UB/Kg 3	\$180 U US/KG 350 U US/KG 450 U	1025 1025 1025 1025 1025 1025 1025 1025	100 US/KG 2000 1100 TO	1900 to 1907 to 1907 to 1907 to 1907 to 1900 to 1907 t	1000 1 1000 1900 2100 2000 1 100 1800 U 1800	1900 UJ 1976 1900 2100 UJ 19769 2100 2000 UJ 19764 2000 UJ	1900 U1 US/Kg 1900 U1 US/Kg 2100 U1 US/Kg 2100 2000 U1 US/Kg 2000 1800 U1 US/Kg	250 10 40/kg 250 450 10 10/kg 450 10 10 10/kg	10 09/Kg 250 450 09/Kg 240 200 11 11 11 11 11 11 11 11 11 11 11 11 1	1900 i 100 1 100 1 100 1 100 1 100 1 100 1 100 1 100 1 100 1 100 1	380 U ug/kg 380 430 U ug/kg 400 U ug/kg 400 370 U	380 U US/kg 380 430 U US/kg 430 U US/kg 400 U US/kg	280 USAKG 210 USAKG 430 USAKG 400 USAKG 400 USAKG 400 USAKG	1 000 1000 1000 1000 1000 1000 1000 10	370 U 19/kg 370 400 U 19/kg 370 400 U 19/kg 370 U 19/kg	380 U USYKS 380 430 U USYKS 430 U USYKS 400 U USYKS 400 U USYKS	380 U 198/kg 380 430 U 18/kg 430 400 U 18/kg 400 370 U	1900 UJ UG/KG 1900 2100 U UG/KG 2100 U UG/KG 2100 U UG/KG 1800 U UG/KG 1800 U U UG/KG 1900 U U UG/KG 1800 U U U UG/KG 1800 U U U U U U U U U U U U U U U U U U	1 180 Kg 1 180 Kg 1 180 Kg 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	13 ug/kg 1500 2100 Ug/kg 2100 2500 Ug/kg 2000 Ug/kg 1000 Ug/kg 1000 Ug/kg 2000 Ug/kg 2000 Ug/kg 1800 Ug/kg 2000 Ug/kg 200	### 1900 U UG/KQ 1 1900 C100 C100 C100 C100 C100 C100 C1	0.05 DOS PARAMI II UVY ULTO CALON TOUCH COOCE BARRO DI DOS	370 US/kg 370 US/kg 430 400 U US/kg 400 370 U US/kg	180 1 180 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	19000 k us/kg 19000 21000 U ug/kg 21000 U ug/kg 20000 18000 U ug/kg 11		380 UJ vg/kg 380 430 UJ vg/kg 430 400 UJ vg/kg 400 370 UJ	2000 - 2000 - 2000 - 2000 - 2000 - 2000 - 2000 - 2000 - 2000 - 2000 - 2000 - 2000 - 2000 - 2000 - 2000 - 2000 -	E 19000 TANDO TINDO OF OBJECT COORD OF COORD COORD	Sylen control sylen to money one Sylen to money one Sylen
Lab Sample Numbers   Signature   Signature		Pvrene	Butylbenzylphthalate	3,3-Bichlerobenzidine	Senzo (s) anthracere	Chrysene	bis(2-Ethylhexyl) phthalate		Bento (b) fluoranthene	Benza (K) fluoranthene	Benzo (a) pyrene	Indeno (1,2,3-cd) pyrene			244511 34451443211 #554444	C+kul mathematil formt		a-ritrosocioeridine	Phenyl-tert-butylamine	2,6-Dichlorophenol	N-Nitroso-di-n-butylenine	x-xitrosodiethylenine	Z-#itrosopyrrolidine	Senzidine	1,2,4,3-1etrachiorocenzena	1- Eachthol and the	2-Neighthytomine	2,3,4,6-Tetrachlorophenol		4-Aminosiphenyi Bantachiatanitrahan		p-(Dimethylamino)azobenzene	7,12-0 imethylbenz(A)Anthracene	3-Methyl chol anthrene				Nexach Loropropene	p-Phenylenediamina	Safrole	Isosafrolæ	1.4. Naph thoquinone	1,5-Unitrobenzene		A-Nitracrimotine-1-naide	Mathanyri Lare	3.3-Dimethylbenzidine	CONTRACTOR OF THE PROPERTY OF	をなることとと、 これは、1743	Hexachlorophene .

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R9971004 GROUP111 TCB00103 31-HAY-95 QUAL UNITS	18/88
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